

Security in store Vendors are scrambling to help companies safeguard their SANs. **PAGE 10.**



Yipes goes Chapter 11 Ethernet service provider stinging from lack of capital, CEO Jerry Parrick says. **PAGE 8.**

NetworkWorld

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This new network **Page 44**

Say goodbye to the office cubicle.
Innovative ways of delivering data, voice and power lines let users self-configure their work spaces, reducing IT costs for moves and changes.

Gigabit Ethernet prices in free fall

■ BY PHIL HOCHMUTH

An abundance of inexpensive Gigabit Ethernet switches and network interface cards is changing the way networks of all sizes are connecting servers and end users.

Copper-based Gigabit Ethernet began shipping en masse last year. Since then prices have

dropped steadily as vendors — even market newbies such as Dell — have raced to put 1000Base-T products in their portfolio.

Last week, several equipment makers announced wares that offer low prices for Gigabit Ethernet connections along with additional management and switching functions.

See Gigabit, page 16

Licensing flap

Users angry over changes that force upgrades, hike costs.

■ BY JOHN FONTANA

As if the recession wasn't enough, network executives say they are being squeezed by major software vendors instituting licensing changes that create unwarranted financial burdens. Worse yet, these customers often see no choice but to pay up.

During the past two weeks, Oracle has come under fire from customers and industry analysts about licensing issues that could jack up costs for database users. Microsoft and IBM also have introduced licensing changes over the past year that customers criticize, saying the plans increase costs and force upgrades, and require the purchase of support and services they don't want or need.

"Vendors are herding users in

the direction they want them to go instead of letting us go at our own pace," says Barry McGrady, manager of global technical services for Imerys, a mineral processing company. "I don't like being herded."

McGrady took a stand that he

knows may cost him later. Instead of spending "six figures" to convert to Microsoft's new Software Assurance licensing model, which requires users to pay for the latest software whether they use it or not, McGrady decided not to upgrade his Office 97.

"It means I'll have to pay more and buy all new licenses down the road," if and when his company upgrades Office, he says.

Critics of the licensing changes characterize them as part of a general move by financially strapped vendors to create a recurring revenue stream. They also say the move is the start of efforts to figure out how to license software for forthcoming Web services. Vendors have seen current revenue models pinched as customers delay upgrades and

See Software, page 61



More online!

Gartner analysts charge that Oracle made new licensing pricing models "confusing for customers and often applied charges incorrectly."

DocFinder: 8740

Your take Network executives share their wisdom **Page 14**

For the latest in our series of network executive Q&As, we spoke with energy giant Dominion's CIO **Lynn McDermid**. Read her thoughts on:

- The role of network infrastructure during the merger process
- Upgrading to Gigabit Ethernet
- Why security is this year's top priority

CRAIG ANDERSON

An aerial photograph of a city at night, likely New York City, showing a dense cluster of skyscrapers. A dotted line path starts from the top left, curves over the city, and ends near the bottom right, suggesting a global or extensive network. The text "Manage every server out there without leaving here." is overlaid in white at the bottom right of the image.

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Face-off

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Down with the cubicle!

New ways of delivering data, voice and power lines create flexible work spaces that can be shaped by end users. **Page 44.**



Telecom Tracker

Management tools can help you track telecom assets and reduce expenses. **Page 47.**



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TechNet's Rick White, left, and YankeeTek Ventures' Howard Anderson take a stand in our Face-off on whether the U.S. should have a national broadband policy.

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Is IT holding you back?

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Is your network ready for wireless? Find out with our free Tech Update "Integrating and managing wireless in your network" event. **DocFinder: 8546**

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New

Bits

Study cites rapid growth of IP telephony

■ Enterprise adoption of IP telephony is on the upswing, as the U.S. market for voice-over-IP handsets hit the \$1 billion mark in 2001, according to a recent report. Cahners In-Stat says the market for IP voice gear will reach \$5 billion by 2006, as IP phone systems start replacing aging circuit-switched PBX systems. IP phones tripled last year from the previous year. In addition, the average number of IP handsets installed per new system (or new IP PBX installation) was around 68 in 2001, double the amount from the year before. The growth in the size of IP voice rollouts signals that companies are shifting the technology from the testing stage to live deployments, especially in branch offices and in new buildings where new phone systems are needed, experts say.

SEC looking into Network Associates' numbers

■ Network Associates last week disclosed it is being investigated by the Securities and Exchange Commission over a statement on Dec. 26, 2000, in which the company warned

it would post a net loss of about \$140 million for the fourth quarter of 2000. Network Associates CEO George Samenuk, who assumed his post in early 2001 as part of a new management team, says the security vendor had its auditor PricewaterhouseCoopers double-check the company's financial results for 2000, and they "continue to believe the accounting was proper."

Walter Hewlett sues over merger vote

■ Walter Hewlett last week filed suit against Hewlett-Packard, taking issue with the process by which HP solicited votes for approval of its acquisition of Compaq. The suit was filed in the Delaware Chancery Court by Hewlett and Edwin van Bronkhorst, a fellow trustee of the William R. Hewlett Revocable Trust. The complaint focuses on HP's process for soliciting votes from large institutional stockholders, particularly Deutsche Bank. Hewlett has requested that the court expedite its proceedings so that the issue can be resolved as quickly as possible, he says. His goal is to ensure the outcome of last week's stockholder vote was determined in a "fair, full and lawful manner," he says. HP dismissed the lawsuit as without merit. HP management says early indications are that the deal has been approved by shareholders. Compaq shareholders overwhelmingly approved it.

FCC to return money to wireless carriers

■ Wireless carriers will get back most of the \$3.3 billion given to the Federal Communications Commission in down payments for spectrum licenses previously awarded to NextWave Telecom. The FCC last week announced it will return \$2.8 billion, or 85%, of the down payments made by Verizon Wireless, VoiceStream Wireless, AT&T Wireless Services and other cellular carriers for the spectrum. The bidders won the spectrum after NextWave defaulted on its payments to the FCC in 1996. NextWave recovered the spectrum in bankruptcy court in June after the FCC had already reaucted the spectrum for about \$17 billion, more than three times the original \$4.74 billion price. Legal and political wrangling failed to settle the matter between NextWave, the FCC and the jilted carriers, and in January, the auction winners petitioned the FCC to return their 20% down payments and to formally annul the auction results. The FCC maintains the validity of the auction. The U.S. Supreme Court agreed earlier this month to hear the FCC's case against NextWave over the license ownership.

Court to review 'unwanted e-mail' case

■ The California Supreme Court agreed last week to review a lower court's decision that effectively let companies sue those who send unwanted e-mail to their employees, according to the Electronic Frontier Foundation. The case concerns ex-Intel employee Ken Hamidi, who was sued by the chipmaker after he sent six mass e-mail messages to current Intel employees, complaining about the way the company treated its workers. Intel won an injunction against Hamidi in November 1998, saying that he was flooding the company's systems and trespassing on its property. Hamidi appealed with support from the EFF and the American Civil Liberties Union, claiming his free speech was violated. Last December, the Third Appellate District Court of California ruled that sending the unwanted e-mail was a "trespass," citing an antiquated legal argument called "trespass the chattels." That doctrine prohibits others from interfering with your personal property.

■ TheGoodTheBadTheUgly

 **Covad comeback?** Maybe Chapter 11 doesn't have to be the end of the story. DSL provider Covad Communications, which recently emerged from a bankruptcy protection process during which it wrote off \$1 billion in debt, last week posted a fourth quarter profit and a 62% revenue increase over the previous year's fourth-quarter results.

 **Kids these days.** "The day someone says third graders can't be hackers is the day that third graders will have brought down our network," says Joe Way, network manager for Exeter School District in Pennsylvania. ➤

 **Here we go again.** Computer Associates is under fire again from Ranger Governance, the investment firm founded by Sam Wyly, who last year failed in his attempt to oust four CA directors. This time around, Ranger is calling on the software maker to axe its top three executives because of what Ranger cites as poor performance.



MICHELLE BARBERA

Red Hat releases Advanced Server

■ Linux leader Red Hat last week rolled out what it is calling a more robust, fault-tolerant version of its Linux operating system designed for large companies. Called Red Hat Linux Advanced Server, the software is intended for organizations with expensive Unix systems that are considering migrating to less-expensive Intel-based servers. Red Hat Linux Advanced Server supports servers with up to eight processors and offers improved process scheduling, clustering, load-balancing and fail-over configurations, the company says. The Red Hat Advanced Server software starts at \$800 and will be available this quarter.

Identrus acquiring Digital Signature Trust

■ Identrus, the New York provider of digital-certificate trust services for financial institutions, last week announced an agreement to purchase Digital Signature Trust. A provider of digital identity services, DST is owned by Zions Bancorporation and the American Bankers Association. While terms of the purchase agreement were not disclosed, Zions Bancorporation is expected to retain a 33% ownership stake in DST.

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Yipes files for Chapter 11 protection

Company vows to keep metro Ethernet network running while it reorganizes.

■ BY MICHAEL MARTIN

Metropolitan Ethernet pioneer Yipes Communications' Chapter 11 filing late last month shouldn't have any immediate impact on customers, because the carrier plans to keep operations running as it tries to straighten out its finances.

But doubts about Yipes' long-term viability could have a ripple effect on other metropolitan Ethernet providers that have thus far survived the overall competitive carrier bloodbath.

Despite Yipes' problems, industry observers say Ethernet will remain an option in the metropolitan-area network (MAN) and long haul.

"Yipes really proved Ethernet is a viable technology outside the LAN, and they forced other carriers into the market," says Jason Knowles, an analyst with Current Analysis. All the regional Bell operating companies now have Ethernet services in place or in the works, in large part because Yipes has made end users aware of Ethernet's potential, Knowles says.

Yipes, which has raised about \$191 million in equity and \$40



“This proposed restructuring is unavoidable given the unprecedented pessimism affecting providers of capital to the telecom market.”

Jerry Parrick
CEO, Yipes

million in debt since starting up about two-and-a-half years ago, filed for bankruptcy protection after failing to raise additional funds.

"This proposed restructuring is unavoidable given the unprecedented pessimism affecting providers of capital to the telecom market," Yipes CEO Jerry Parrick said in a statement.

The company faces a cash squeeze because of fixed infrastructure and real estate agreements that were forged when the telecom market was soaring. Yipes plans to restructure those agreements to better reflect current market conditions and emerge from bankruptcy protection.

The privately held company had given few clues about its

financial problems. Earlier this year, the company reported that sales in 2001 grew 64% over the year before and that a study showed its customers were very pleased with their service. The company also has been promoting Yipes World, part of the Gigabit Ethernet Conference in Santa Clara later this month.

Yipes also issued a steady stream of press releases trumpeting customer wins. It landed some large customers, such as the Chicago Stock Exchange, but most clients were small and mid-size businesses.

The Chapter 11 filing caught some Yipes customers offguard.

"I didn't have any idea this was coming," says Paul Ladd, MIS director at Suffolk University in Boston.

Ladd isn't worried about his Yipes Internet connection and point-to-point services because the company has assured him there will be no disruptions. He also has a fractional T-3 from Genuity as a backup. Still, Ladd doesn't want to see Yipes disappear. "They're by far the cheapest provider around, and I'd like to keep them," he says.

When Ladd went shopping for a point-to-point connection in Boston, he found that Yipes' service gave him three times as much bandwidth as a Verizon transparent LAN connection, at half the price.

In addition to its aggressive pricing, Yipes differs from most providers by giving users an Ethernet hand-off to the MAN or WAN,

rather than a traditional telephone company circuit. With this Ethernet connection, users can order Internet or point-to-point access in 1M bit/sec increments up to 10M bit/sec.

Other early entrants to the metropolitan Ethernet market, such as Cogent Communications and Telseon, have long emphasized that while they all use Ethernet in the last mile, their business models are all different. Yipes concentrates on selling interoffice high-bandwidth connections; Cogent sells high-speed Internet access; and Telseon wholesales most of its network capacity to other providers.

Cogent CEO Dave Schaeffer says his company's acquisition of PSINet last week is proof that the company is focused mainly on the Internet-access market.

But Cogent, which became a public company when it acquired broadband provider Allied Riser last year, has also had its share of financial troubles. In the first six months of 2001, the company lost \$28 million after taking in a paltry \$90,000 in revenue. Telseon is privately held, so its financial situation is unclear to outsiders. ■

Start-up's IP phone switch extends DSL services

■ BY TIM GREENE

ROCKVILLE, MD. — Start-up Sentito Networks is coming out with a full-featured local telephone switch that will make it faster to set up DSL services, extend DSL to areas where it currently cannot reach and support services such as frame relay to the home.

Sentito's New End Office Service Switch (NSS) enables service providers to connect one set of wires to a customer's house and change the services that are delivered over them without touching the wires again.

Today, if a service provider wants to upgrade customer phone lines to DSL, a technician has to move the wires from one card on a switch to another card. With Sentito gear that change can be made by uploading software to the NSS line card to which the wires are attached. NSS has cards for two-wire connections that support phone service and DSL, and four-wire cards for T-1, channelized T-1, primary rate interface ISDN and frame relay.

For example, corporate frame relay networks could be extended to homes that are served by NSSes, making it possible to

link telecommuters to frame relay networks rather than introducing new technologies such as VPNs.

"Manipulation of [wires] is eliminated, and moving wires is very expensive," says Michael Kennedy, co-founder of Network Strategy Partners, a network consultancy. NSS also reduces the time it takes to provision a new service, he says.

Because these devices can be installed in switching offices or stand alone in neighborhoods, DSL services can be extended farther from switching offices than the 18,000-foot radius DSL would otherwise support.

Free-standing remote devices called digital loop carriers exist today to extend switching offices, but they simply aggregate customer lines and trunk them back to switching offices. Sentito's NSS is a full local phone switch, commonly called a Class 5 switch. Because it's based on IP, long-term it can let carriers run voice and data over

PROFILE: SENTITO NETWORKS

Location:	Rockville, Md.
Founded:	September 2000
Product:	New End Office Services Switch for voice and data.
Financing:	\$11 million from Mid-Atlantic Venture Funds, Technology Venture Partners, Kodiak Venture Partners, Core Capital Ventures and Inflection-Point ventures.
Employees:	65
Competitors:	Santera, Taqua, Nortel, Lucent

one network rather than running separate voice and data networks. In the meantime, it can switch traffic onto existing voice and data networks or onto IP networks.

NSS performs the functions of two devices found in packet voice networks — the media gateway, which translates traffic from one protocol to another, and the media gateway controller, software that sets up calls and mixes in call features such as caller ID. NSS can support 65 call features on its own and can tap into call-feature

software on other Class 5 switches.

This approach is similar to that of other softswitch start-ups such as Taqua Systems and Santera Systems, Kennedy says. These companies have been around longer and have products that are shipping, while Sentito starts beta tests next month. NSS will be generally available next year.

NSS is a 14-slot chassis with 12 customer slots and two trunk slots. Pricing starts at

\$30,000, and the price per port is roughly comparable to that of a traditional Class 5 switch, Sentito says.

Founders of the company come from telecom equipment maker Tellabs and Salix, an early media gateway vendor that was bought by Tellabs. Tellabs dropped the Salix line of business last year.

Sentito also makes NEO SIP/SS7 Proxy, a signaling gateway, and NEO Services Manager, a management platform for Sentito gear. ■

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Vendors to tighten Fibre Channel nets

■ BY DENI CONNOR

Users of Fibre Channel networks are becoming increasingly concerned about the security of the data on their storage networks and Internet data centers.

In response, start-ups and established storage companies are launching technologies that add security to Fibre Channel and rely on capabilities such as IP Security (IPSec) and Secure Sockets Layer (SSL) au-

“Security is a high priority in our data center mainly because we work in a very competitive industry and there are always consultants coming and going . . .”

Raymond Young

Senior adviser, Bristol-Myers Squibb

thentication to inspect, authenticate, encrypt, accelerate and compress block-level storage-area network (SAN) data to protect it from internal or external intrusion.

Hifn, Trebia Networks and NetOctave are building storage processors that encrypt and compress storage data moving across networks.

Two other companies, NeoScale and Sotera Networks, are making security appliances that use storage processors. NeoScale makes an appliance that is tailored to Fibre Channel networks and inspects block-based storage data, encrypts it with Triple-DES, compresses it and shoots it back out at wire speed. Little is known about Sotera other than that the company makes an encryption and authentication appliance.

The processing overhead of security measures of this type might raise concerns about performance degradation, but vendors say they can counter any such effects through packet acceleration.

Several storage giants, including Cisco

and EMC, are working on an authentication protocol with key exchange and digital certificates called FCsec that is built especially for switches used to bridge SANs over IP. Switches containing FCsec are expected to ship later this year.

Each of these companies says it hopes to allay customer concerns about the security of SAN data when it is exposed to IP via bridging, when it abuts the LAN or when it is sheltered in a data center.

“The Fibre Channel standard did not define any security itself,” says Arun Taneja, an Enterprise Storage Group analyst.

The reality is there will be as much Fibre Channel outside the data center as within, he says. Because Fibre Channel spans a distance up to 6.2 miles, it is practical to bridge Fibre Channel SANs over IP networks.

While most SAN users have not yet relocated their SANs from physically isolated data centers where they are mostly protected from intrusion, users are starting to consider the threats that can arise when they are exposed to IP networks. They also understand that the security methods vendors have built into Fibre Channel are not enough to prevent intrusions.

In Fibre Channel, data is partitioned among servers and storage by techniques called logical unit number (LUN) masking and zoning. In LUN masking, storage partitions are created and assigned to different servers and consequently users via host bus adapters or disk controllers. Zoning can be implemented in hardware or software and involves assigning storage space to the individual ports of a Fibre Channel switch.

Raymond Young, a senior adviser for Bristol-Myers Squibb in Princeton, N.J., oversees a data center SAN that partitions data in this way. He says that the LUN masking the EMC Symmetrix hardware he uses is sufficient protection because so few people have the ability to change it. But, he says precautions may be required to isolate data from possible internal intrusions.

“Security is a high priority in our data center mainly because we work in a very competitive industry and there are always consultants coming and going to and from

our competitors,” Young says. In certain circumstances, data needs to be protected from other departments, he says, because “some of [it] is highly proprietary.”

Young says that were he to implement site-to-site replication between SANs, encryption would be necessary.

While LUN masking and zoning contribute to the security of SAN data, they have drawbacks, says Tom Clark, technical marketing manager at Nishan Systems. Hardware-based zoning can easily be misconfigured, allowing access to storage; and software-based zoning can be spoofed or sniffed with a protocol analyzer in much the same way as IP can, Clark says.

Fibre Channel giant Brocade Communications has created Secure Fabric OS to refine zoning security that runs only on Brocade switches.

LUN masking and zoning also don't ensure thorough authentication methods that allow only the correct user access, nor do they encrypt or speed the transfer of data to keep it out of the hands of malicious users.

NeoScale is announcing a 2U-high (3.5-inch) appliance called the CryptoStor, which will provide wire-speed authentication, encryption and access to SAN data. It will use policies set by the administrator to enact rules based on the block of informa-

A variety of uses

Storage security appliances can be deployed in several places to accomplish different tasks, including:

- To protect data within a SAN data center from internal intrusion.
- To bridge SANs across a LAN to protect data from internal or external intrusions.
- To bridge a SAN across the Internet to protect data from external intrusion.

tion and the person or group for which it is intended. In a data center, data intended for human resources might need to be isolated from the data of other departments so that employees can't manipulate the data or change the system configuration. NeoScale's CryptoStor is expected to ship later this year.

NetOctave will market IPSec-enabled and SSL Gigabit Ethernet, and OC-48 silicon and VPN gear that can be remanufactured into other vendors' switches.

Hifn and Trebia, a maker of single-chip silicon, will jointly provide silicon-enabled IPSec, Triple-DES encryption and Internet Key Exchange, a form of public/private key exchange. ■

WorldCom squeezes frame relay pricing

■ BY DENISE PAPPALARDO

WorldCom last week announced two unmanaged frame relay service packages that promise cost savings of 30% to 50% over current rates. The company has lowered prices for its low-speed frame circuits to woo small and midsize businesses, providing an alternative to private lines and IPVPNs.

With its Bundled Frame Relay and Economy Frame Relay packages, WorldCom combines fees for ports, permanent virtual circuits (PVC) and committed information rates (CIR) and bases pricing on the company's network architecture.

Under the Bundled Frame Relay plan, companies can choose from 56K to 1.544M bit/sec frame ports with bandwidth guarantees ranging from 16K bit/sec up to T-1 speed. Local access is not included.

A Bundled Frame Relay service customer that has 19 remote locations, each with a 56K bit/sec frame relay port and CIR at 16K bit/sec, will pay about \$6,000 per month, roughly half what it would cost under WorldCom's standard frame relay pricing. This is based on a one-year contract and includes a preconfigured Verilink DSU-CSU at each site.

The Economy Frame Relay package only supports CIRs up to 32K bit/sec and does not include hardware, but does include local access to WorldCom's frame relay network. WorldCom is targeting this package at companies that need connectivity for low-bandwidth applications, such as point-of-sale or basic e-mail.

“Economy Frame Relay is a no-frills option. It's for larger customers that have lower bandwidth requirements at remote locations,” says Meg Moschetto, a WorldCom marketing executive.

An Economy Frame Relay customer that has 99 remote locations, each with a 56K bit/sec frame relay port and 16K bit/sec CIR over 198 PVCs used to create a meshed network architecture, would pay about \$19,000 per month. This price is based on a one-year contract. WorldCom says this customer would see a 40% to 50% cost savings compared with the carrier's standard frame relay offer.

WorldCom: www.wcom.com.



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Source: Qwest® and WorldCom™ SLA terms and conditions published on www.qwest.com and www.worldcom.com as of 3/2002.

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Weapons emerge to fend off DDoS attacks

Mazu, McAfee Security and Sanctum air their latest wares.

■ BY ELLEN MESSMER

Mazu Networks, which makes equipment to stop distributed denial-of-service attacks, last week said it has added a way to determine what legitimate traffic is being filtered out in the process.

Typically, the legitimate traffic filtered out by Mazu's distributed DoS Enforcer boxes during a massive attack wouldn't be more than 5% of the overall incoming traffic, but customers have sought more detailed information on any legitimate traffic that gets set aside.

"Filtering is a dramatic step for an operator to take," says Phil London, Mazu's CEO.

"So we've added the capability to provide detailed assessment of what applying a filter to traffic might mean," he adds.

Mazu also has added a way to filter out attacks with dangerous payloads, such as the Nimda and

Code Red viruses, which attempt to install a Trojan horse during the course of scanning attacks.

The new capabilities are available as free upgrades to or with new purchases of Mazu's \$35,000 distributed DoS Enforcer 300 for corporations and \$125,000 distributed DoS Enforcer 10000 for service providers.

The Mazu upgrades are the latest in a slew of new vendor offerings aimed at safeguarding customers' networks and data.

McAfee Security, a division of Network Associates, has been pressed by customers of its antivirus products to better counter computer worms that infiltrate servers and desktops by exploiting vulnerabilities in unpatched systems.

The company this week unveils McAfee ThreatScan, a tool for

desktops and servers to probe for 250 types of vulnerabilities in Microsoft NT/2000/XP and in AIX, FreeBSD, Linux, OpenBSD and Solaris. The ThreatScan software agents, which can be man-



“Filtering traffic is a dramatic step for an operator to take.”

Phil London
CEO, Mazu

aged via McAfee's ePolicy Orchestrator console, cost less than \$22 per node for a 250-node account.

The McAfee product is aimed at antivirus administrators and is less comprehensive than offerings such as Internet Security Systems' Internet Scanner, which

would look for more than one thousand known vulnerabilities, says Candace Worley, product manager for McAfee Security. "The tool was developed to meet those customers' requests to find out what they don't know," she says.

Behavior blockers

Other vendors, such as Sanctum, take an approach to network security called behavior blocking. Their offerings attempt to prevent attacks on servers and desktops by restricting the sort of unauthorized activity that a worm typically might try, such as changing registries.

Sanctum this week unveils AppShield 4.0, the latest version of its application-security proxy software.

This offering sits in a device in front of a Web site to prevent hackers from using buffer overflows or other tricks to exploit weaknesses that may exist in Web-based applications.

Each Web page passing through AppShield compares what a user tries to do with predefined rules for logon, data transfer and use of ActiveX and Java. "Customers that had AppShield didn't get Nimda and Code Red," says Sanctum CEO Peggy Weigle.

According to Weigle, AppShield 4.0 includes a way to hide details about the internal URL mapping of a Web site and includes security templates that can be set to "basic," "intermediate" or "strict" in terms of behavior-based controls. The templates offer an alternative to having to set complex configuration controls.

"Basic is to prevent defacement, for example," she says, adding that security professionals need to determine the trade-offs in using the strict setting vs. allowing more user flexibility. "Out of 25 customers testing this new feature, most choose to use the intermediate setting."

AppShield 4.0, which costs \$15,000 per server for Win NT/2000 or Solaris, now also filters Web pages more quickly — 3 msec as opposed to the previous version's 10 msec.

Mazu: www.mazunetworks.com; McAfee: www.mcafeeb2b.com; Sanctum: www.sanctuminc.com

NetIQ expands VoIP management

The software may help companies improve performance on VoIP networks.

■ BY DENISE DUBIE

SAN JOSE — NetIQ this week added features to its voice-over-IP management software that observers say should help enterprise users improve call quality and performance.

Through new software modules, NetIQ's VoIP Manager 2.0 now can monitor H.323 Call Setup servers, as well as Cisco VoIP and videoconferencing servers. The company also released modules that let the software work with Micromuse's Netcool and Hewlett-Packard's OpenView network management software. NetIQ also added a module for Dell OpenManage to let NetIQ users monitor hardware performance from the VoIP Manager console.

H.323 Call Setup is a way to link the Internet to a private phone network, and NetIQ now can tap in to it to track voice performance. All new modules give users the capability to see a more complete picture of their combined voice and data networks, says John McConnell, president of research firm McConnell Associates.

"Some of the quality of voice out there is not the kind of thing enterprise users want to do their business on; there's delay and jitter, things that don't affect performance on a data network as much," McConnell says. "NetIQ is addressing the performance of voice applications, helping users find the contributors to delay by measuring and monitoring service quality."

NetIQ added these software modules to help users further integrate their VoIP networks

into a standard network-management strategy. The NetIQ console can show performance metrics on voice applications, such as unified messaging, and can display network metrics collected by Netcool or OpenView, such as router downtime. It also can show users how their voice applications affect the network and vice versa, McConnell says.

VoIP Manager runs on a Windows 2000 Server and uses a SQL Server database repository. The software communicates with agents and modules installed on PBXs and servers on a network via a secure, remote procedure call — meaning the agents don't poll the network. Users configure the agents to collect and batch data, and send it back to the repository at predefined frequencies, NetIQ says.

IDC Senior Analyst Paul Bugala says VoIP management products from companies such as NetIQ, NetScout Technologies and Brix Networks can help data network managers learn how voice applications perform in the IP world.

"Managing the quality and performance metrics of a VoIP network may help push enterprise users past the assessment stage into deploying VoIP applications on their networks, which can offer cost savings in the long run," Bugala says.

VoIP Manager 2.0 costs \$2,500 for the management console. The modules are priced on a tiered basis. A company looking to manage a 50-telephone pilot VoIP network could spend \$5,000, while a larger deployment of VoIP Manager and modules could cost more than \$100,000.

NetIQ: www.netiq.com



Network Management

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Q&A

Your take

Network executives share their wisdom

Dominion exec puts energy into solving merger challenges

Two years ago, the merger of Virginia Power and Consolidated Natural Gas created Dominion, one of the nation's largest and most diversified energy companies. Lyn McDermid, Dominion's senior vice president for IT and CIO, spoke recently with Network World Senior Editor Carolyn Duffy Marsan about the pressures that mergers place on a company's network infrastructure, how to avoid pitfalls when integrating diverse networks, and why security is her top priority for 2002.



What do you see as your role with regard to the network infrastructure?

My role on the network is not so much a technical role but a budget management role. I also work strategically with the business units regarding new acquisitions and where the network needs to go from a geographic and reliability standpoint. I rely on the technicians to do the design, deployment and management of the network.

Describe Dominion's network infrastructure.

Because of the major merger we did two years ago, we had two independent networks that we had to bridge together. The network for the Virginia area was SONET, redundant and very reliable. The network on the Ohio, West Virginia and Pennsylvania side had single points of failure and not a lot of redundancy. Now we're upgrading that network.

We have several key locations that are network hubs: New Orleans, Pittsburgh, Houston, Cleveland and Richmond. We have server farms at each of our five major sites, and our main mainframe data center is in Richmond. We're a heavily fiber network, and a lot of it we own. We're seeing traffic growth rates of 15% to 20% a year.

What network upgrades do you have planned this year?

We had an ATM network that really wasn't working well for the volumes we have. We put it in about three years ago. We're upgrading to Gigabit Ethernet. We're using Cisco routers and taking out Bay Networks equipment. We started that project about a year and a half ago. The main hubs will be upgraded to Gigabit Ethernet by the end of this year. We're probably 60% done.

On the gas side of the company, we had the network going down once a week in the early stages of the merger. Now it's rare for it to go down at all. Servers still crash, but the network itself is up. And the router redundancy that we put in is really paying off. We had a failover in Pittsburgh about three weeks ago that worked great. We have duplicate routers at each of our five main locations. Because the network is fairly redundant all the way around, it fails over to a completely different city.

How did you justify the Gigabit Ethernet upgrade to upper management?

Because of the network problems on the gas side, it was really easy to sell the upgrade. We don't do a lot of [return

on investment] on network infrastructure investments. We do metrics. We do capacity utilization. We do downtime. [Metrics] that can easily communicate to executives that

we're reaching a point where the network may affect their business. It really is a risk/reward type of analysis, as opposed to a pure financial ROI.

What can other network executives learn from your experience handling the IT side of Virginia Power's merger with Consolidated Natural Gas and subsequent acquisition of Louis Dreyfus Natural Gas?

Thinking of the network as strategic and fundamental to the merger is key. It's the circulatory system of the company, and therefore it has to be solid. So we have to have enough

capacity to take on additional companies. We need the reliability and the redundancy to take on critical functions. Certainly, nuclear power plants are critical functions. We have to have the people who know how to do it. We have a couple of key people dedicated to doing due diligence [when we hear about a merger]. They're evaluating [the network infrastructure], so when the actual deal is done, we're ahead of the game.

We have to understand the applications that run on the network. Standards are key. We don't spend a lot of time evaluating 'Are we going to go to Outlook or Notes?' We know what we're going to go with, and we implement it. Relationships with vendors [help us] go ahead and interconnect. We lease lines very quickly. We have good relationships with [WorldCom] and Sprint so we can get on the top of their priority list.

How is Dominion's network infrastructure a strategic asset for the company? How does it differentiate Dominion from its competitors?

We've always thought of the network as strategic. When we're in an acquisition mode, the quicker we can integrate the networks, get information out to employees and streamline processes through applications being deployed across the network, the more we can get the synergies that we expect. It really does work well. The other area where the network is strategic is in our relationships with customers. We have several initiatives under way regarding Internet communications with customers, Internet billing and having contractors place service orders over the Internet. If we can do more of that customer relationship over the network, that is of value.

In terms of competition, the big guys — Duke Energy, Southern Company — are all moving together [to new network technologies.]

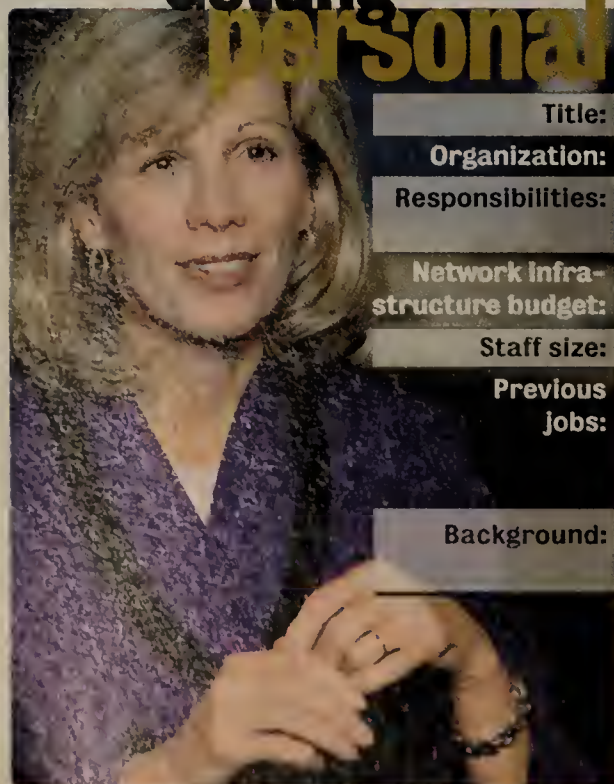
The smaller energy companies that can't afford to are not. It's an investment. We're investing \$20 million to \$30 million in a network upgrade when we'd rather be buying new power plants or growing the business. It's something you really have to justify. We are very lucky that we have a team of executives who understand the value of information, the value of technology.

What are your top priorities with regard to your network infrastructure?

Security is No. 1. We're past the reliability crisis. We need to make sure that we create an efficient way to secure the

See McDermid, page 61

Getting personal



Margaret "Lyn" McDermid

Title:	Senior vice president of IT and CIO since January 2001.
Organization:	Dominion, a \$10.6 billion energy company
Responsibilities:	Oversees all IT functions, including network infrastructure, for the company's 13 business units.
Network Infrastructure budget:	\$20 million to \$30 million on WAN, LAN and voice annually.
Staff size:	1,000 employees and 250 contractors.
Previous jobs:	Vice president of IT and acting CIO. Joined Virginia Power's engineering and construction department in 1982 and held various management positions including director of administrative services and director of IS client services.
Background:	Bachelor's degree from Mary Baldwin College. Master's degree in business administration from the University of Richmond.

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Gigabit

Continued from page 1

Puredata led the way with an eight-port Gigabit Ethernet switch for less than \$91 per port, aimed at small network backbones or "power user" workgroups.

Netgear — which offers 12- and 24-port Gigabit switches priced similar to Puredata's new box — released a managed workgroup switch with Gigabit uplinks for about \$850.

This week, 3Com will release a similar product that can also switch traffic at Layer 4.

Allied Telesyn also released a Gigabit Ethernet NIC for less than \$100. (See chart at right.)

An extreme boost

Sierra Nevada, which makes air traffic-control equipment for the Department of Defense, recently used copper Gigabit, or 1000Base-T, equipment from Cisco to upgrade the LAN backbone at its Sparks, Nev., headquarters.

"The copper Gigabit has given our servers an extreme boost," says Craig Cuthbert, Sierra Nevada's network engineer. The company added a 12-port 1000Base-T module to its Cisco Catalyst 4006 and added Intel copper Gigabit NICs to its servers. "Our server links are running around 10% to

15% utilization, whereas before we were regularly getting up to 90% utilization on our [Fast Ethernet] links."

The copper Gigabit gear used at Sierra Nevada was not significantly less expensive than fiber products, Cuthbert says, but the use of Category 5e copper cabling instead of fiber Gigabit was an advantage "because the cost involved with installing fiber is high, and running and replacing the Cat5e cables is so easy."

LAN upgrades like the one at Sierra Nevada have helped keep the market for 1000Base-T gear strong, with 25% quarter-over-quarter growth in 2001, according to Cahners In-Stat Group. By contrast, the overall Ethernet LAN switch market last year averaged around 3% growth per quarter. Market leaders in terms of 1000Base-T switch shipments were Cisco with 47%, followed by 3Com with 17% and Hewlett-Packard with 11% of the market.

Solving bottlenecks

"No one wants to replace [cabling] because it is so expensive," says Lauri Vickers, a Cahners In-Stat analyst. "Companies that may have had bottlenecks in the wiring closet but didn't have the budget to run in-wall fiber cabling are looking at copper Gigabit to solve those problems." Besides savings on cabling costs, Vickers says, the 1000Base-T equipment itself averages around one-third the cost per port of single-mode, fiber-optic cable.

The price of Gigabit Ethernet products the past few years has fallen dramatically. Research from IDC shows that the average price for a fixed-configured Gigabit Ethernet switch port has dropped from about \$800 per port when the technology was introduced in 1998, to \$219 per connection this year. Likewise, Gigabit NICs also have come down in price from an average of \$500 in 1999, to the \$200 range today (roughly three times the price of 10/100M bit/sec Ethernet cards).

While inexpensive Gigabit NICs might seem to signal an imminent explosion of 1G bit/sec desktops, Vickers has more reserved predictions.

"[Vendors] are pushing Gigabit to the desktop, but we are still a ways away from that," Vickers says. "The economic slowdown has pushed off a lot of desktop purchases [in companies], and there still isn't a real killer app for it."

One firm blazing the Gigabit desktop trail is Health Communications. The healthcare marketing services firm in Nashville runs a creative department, which consists of 12 Macintosh G4s used as workstations and servers. The machines are used to digitally create marketing materials and video products. When the department outgrew its space and had to move, Keith Mattila,

the firm's interactive services director, saw the opportunity to escape from the group's 10Base-T hub-based network.

"When we moved, we had the opportunity to do it right, and went ahead with wiring all connections with switched Gigabit over the copper," he says. "We looked briefly at Gigabit from a fiber standpoint, but we just couldn't cost-justify it." He adds that wiring the office with fiber would have doubled the cost.

The increased performance of the network has let the company turn projects around quicker, letting it take on more work and lower costs for its clients.

"When you can drag a 300-meg file over to your desktop from the network, or even open it up from the server, that's a big deal," he says. ■



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New product menu

Here is a sampling of the latest low-cost Gigabit Ethernet products:

Company	Product	Description	Price
3Com	SuperStack 3 Switch 4400 SE	24-port Layer 4 workgroup switch with Gigabit uplinks.	\$1,300
Allied Telesyn	2915T	10/100/1000M bit/sec PCI adapter.	\$99
Netgear	FSM76S	24-port managed workgroup switch with 1000Base-T uplinks.	\$850
Puredata	PDC8023Z-8CG	Eight-port unmanaged Gigabit backbone switch.	\$730

Grand Central upgrades network

Company looks to make Web services easier, more secure.

■ BY JOHN FONTANA

SAN FRANCISCO — Grand Central Communications this week will add security, reliability and management features to its hosted middleware network designed to aid companies in the deployment of Web services outside the safe confines of their firewalls.

The new services include transactional messaging, security certificates for nonrepudiation, and exception handling to report errors in a business process.

The Grand Central services are designed to help companies clear the largest hurdles to external use of Web services, namely that they lack mechanisms for security and transactional integrity required to support automated business processes. Web services technology is a set of standards-based protocols based on XML.

Grand Central provides a hosted network that supplies those services, as do others such as Flamenco Networks.

"Right now, Web services implementations are being done by developers using inexpensive tools to do integration work that is safe behind a firewall," says Tyler McDaniel, an analyst with Hurwitz Group. "As that matures, Grand Central provides a way to extend the value of Web services much further. Without this middleware

network, companies would have to build this expensive infrastructure themselves."

The new Grand Central features include a messaging service based on the Web Services Description Language (WSDL) that lets reliable and transactional-quality messaging be added to any Web service. When partners exchange a WSDL file, which describes the interfaces used in a Web service, Grand Central intercepts the file and adds a set of triggers to the messaging services that run on its network. The WSDL-Messaging service is automated so users don't have to change any of their code.

"Before if you wanted these features from us, your partners had to deploy some software," says Adam Gross, vice president of product marketing for Grand Central. "This helps our network be smarter and makes it easier for companies to integrate systems using Web services."

Use of WSDL is expected to explode now that emerging Web services development tools, including Microsoft's Visual Studio .Net and BEA Systems' WebLogic Workshop, automate the creation of WSDL files for Web services-based applications and interfaces.

Grand Central also is introducing an authentication service based on VeriSign certificates, the

manifestation of a partnership announced in February. The certificates are installed on enterprise servers to ensure the identity of servers connecting over the Internet. The company also is adding an exception alerts service that can page or e-mail administrators if a process fails during a business transaction.

The new services are available now. Pricing is based on the number of partners connected over the Internet. The average price for 50 partner relationships is \$150,000.

Grand Central: www.grandcentral.com

Giga growth

There is no end in sight for the popularity of Gigabit Ethernet products, which originally only worked on fiber networks.

Worldwide installed base of Gigabit Ethernet ports (copper and fiber)



THIS WEEK'S QUESTION:

What's the name of the official Java mascot who represents the "agent" technology used in Java?

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Infrastructure

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Short Takes

■ **Hewlett-Packard** is readying a storage appliance that can combine data from a variety of Fibre Channel-based storage arrays into a virtual pool. **HP StorageApps SV3000** is an 8U (14-inch-high) Pentium III device that sits between host computer systems and storage arrays. It works with Windows NT/2000, Linux, Solaris and HP-UX hosts, and HP, Compaq, EMC, Hitachi, Dell and LSI Logic arrays. The box supports many-to-one mirroring and point-in-time snapshot backups and IP replication between geographically separate devices. SV3000 starts at \$125,000 and is expected to be available next month. www.hp.com

■ **AimNet Solutions**, a professional services and managed network service provider, has received \$7 million in new venture funding, bringing its total funding raised to more than \$39 million. The \$25 million company, which expects to turn a profit this year, adds Hickory Hill Ventures to a list of investors that includes William E. Simon & Sons and Mellon Ventures.

■ **LiveVault** has announced an Internet-based service that lets companies back up data to an off-site facility that the vendor runs. **Virtual Backup and Recovery Network** is aimed at small and midsize businesses and remote offices. The VBN includes firewall security, fault-tolerant connections, data encryption, use of digital certificates and data compression, and support for network address translation and compatibility with proxy servers. A typical customer configuration would cost \$50 per gigabyte of protected data per month. www.livevault.com

■ **IBM** and **SuSE Linux** last week said they are uniting to provide Linux support and services. The deal means IBM is effectively acting as a high-profile distributor of the SuSE distribution of Linux, but also providing systems integration, customization and more.

Wireless LAN lessons learned

Coping with everything from renegade users to interfering elevators.

■ BY DENISE DUBIE, APRIL JACOBS AND KATHLEEN OHLSON

Doctors and nurses at St. Luke's Episcopal Health System had to change the way — and even where — they dealt with patients to get the most out of their wireless LAN.

"At first, we couldn't figure out why all of sudden a wireless device would lose its signal. Then we heard the transport elevator pass the floor, and it became very clear," says Gene Gretzer, project manager for access technology at the Houston hospital. After an IT stakeout of sorts, he discovered that metal beds on the elevator interrupted the connection between wireless laptops and the nearest access point.

Since widely deploying the hospital's wireless LAN, Gretzer says, users have begun to realize that computer problems sometimes have nothing to do with the computer. "It's not uncommon to hear, 'Is someone using the microwave? My laptop stopped working,'" he says.

Getting around the physical hurdles of deploying a wireless LAN is just one concern a company must address when going wireless. Network managers also must



ED LALLO/MPG

“The wireless system allows caregivers to spend more time with the patient and less time filling out paperwork.”

Gene Gretzer

Project manager for access technology, St. Luke's Episcopal Health Care System

learn which applications work well on the network and how to better secure the wireless network from potential intruders. More and more companies — particularly those in retail, healthcare, financial services and education — want to conduct business wire-free for easy access and mobility. Many, such as St. Luke's, have learned a few things along the way that have made their wireless deployments a business asset.

In Gretzer's case, as soon as he and his staff performed extensive site surveys, St. Luke's connectivity issues disappeared. And he says routine follow-ups ensure that no one puts, say, a wooden shelf in front of

an access point.

For the most part, St. Luke's staff uses wireless laptops to scan patient wristbands that are produced with a bar code when a patient is admitted to the hospital. All data regarding that patient is then accessible via the bar code. To avoid inputting a lot of information by hand, hospital staffers use laptops equipped with wireless network interface cards to scan the wristbands. Gretzer estimates staff productivity is up 15% to 20% because of the wireless scanning.

"The wireless system allows caregivers to

See Wireless, page 18

F5 box juggles multiple ISP links

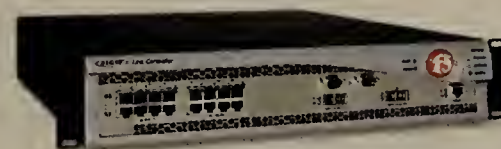
Link Controller designed to protect Web site operators from network failures.

■ BY APRIL JACOBS

SEATTLE — F5 Networks, best known for products that evenly distribute traffic loads among Web servers, last week introduced a box designed to balance loads across Internet access links.

F5's Big-IP Link Controller 2000 also can redirect traffic from one ISP's connection to another's in the event of a failed Internet access link and support efforts by companies to send and receive traffic over the least-cost route based on time of day or other factors.

"Any company that hosts its own Web site or Web-based applications can get value from this technology," says Matt Smith, data center operations manager at RiskLabs, a Marietta, Ga., maker of risk management software and services. "If you rely on the Internet to do business, then you need to be able to load balance traffic and make sure your users have access along with the



F5's Big-IP Link Controller 2000 lets users aggregate multiple connections such as DSL, T-1 and T-3 into a unified virtual link.

people who are trying to get onto your site."

Link Controller sits in front of firewalls and behind routers to accomplish its duties. It connects to these other devices via a mix of 17 10/100M bit/sec Ethernet ports (one for management) and two Gigabit Ethernet fiber ports.

Link Controller polls connections (DSL lines, T-1 links and others) into a company's Web servers or out to external Internet servers, determining the health of those lines and directing traffic over those best equipped to handle the traffic.

The device uses secure network address translation to direct traffic over the best link at any given time and to translate internal, nonroutable addresses into routable ones so that traffic can flow to the most available upstream gateway router.

Companies can set policies to tell the box how to handle certain types of traffic, such as that requiring a lot of bandwidth, or how to handle traffic when an ISP's performance falls below a certain threshold.

The box also can balance traffic loads across firewalls.

F5, which competes with companies such as CacheFlow, Cisco, Nortel and Volera, also offers load balancers, caching devices and content delivery systems.

Link Controller costs roughly \$20,000 with redundant pairs costing close to \$38,000.

F5: www.F5networks.com

Wireless

continued from page 17

spend more time with the patient and less time filling out paperwork," Gretzer says. "On the computing side, it's much faster and gives multiple people immediate access to patient records."

St. Luke's is careful to use applications that work well within a wireless LAN, Gretzer says. Bursty applications, such as e-mail, fit the bill because they allow immediate access to data but consume little bandwidth.

St. Luke's initially invested about \$1 million to set up the wireless LAN and roll out 130 access points. The healthcare group is upgrading its Proxim 802.11 wireless LAN to a Cisco Aironet 802.11b system. The 802.11b standard, also known as Wi-Fi, operates on the 2.4-GHz frequency and offers users speeds of 11M bit/sec, as opposed to the 1M to 2M bit/sec rate of an 802.11 wireless LAN. The upgrade will cost about \$250,000, and the boost in speed will reduce the hospital's access points down to 80, while still providing the same service.

Another healthcare facility exploiting wireless technology is the University of Texas M.D. Anderson Cancer Center in Houston, which in March deployed Cisco 802.11b wireless LAN technology to 120 nurses, doctors, administrators and other employees. The 15-access-point wireless LAN will cost the center about \$45,000, and there are plans to roll out wireless LAN access points to 67 more clinics in the next three years, says Jim Thompson, director of communications and computing.

While implementing the wireless LAN pilot, Thompson and his team encountered an unexpected volume of previously existing signal traffic.

"It turned out we had wireless [pockets] everywhere" because staffers bought their own antennas, Thompson says. Conducting a thorough site survey is important, he says. "You don't want to put an antenna where you have a meshed concrete wall — you can't get a signal out."

Guest services

Wireless LAN implementations in some types of businesses can face challenges that are not common in private companies. In the hospitality industry, wireless LAN deployments can become more difficult when offered as a public service to guests.

Aaron Ruggaber, director of purchasing for Penticton Lakeside Resort & Casino in British Columbia, installed a Lucent Orinoco wireless LAN in mid-2000 to give guests high-speed Internet access. Before implementing the wireless LAN, Ruggaber had to configure each guest's laptop to

dial in to the resort's Internet setup.

"It was a very slow [process] and a pain in the butt," he says. "We weren't able to give the access we wanted to clients."

Guests have the option of receiving a wireless network PC card and client software that can be integrated into the laptop for wireless access. However, Ruggaber says resort guests have not embraced the wireless technology as he had expected. He also has encountered more obstacles than he anticipated deploying the equipment, and from vendors.

Ruggaber was told a wireless card installation would take about 10 minutes, but it actually averaged 35 to 40 minutes for each installation.

Venetian Hotel in Las Vegas also deployed a wireless LAN to let staff check in guests in the convention center or at the carport using handheld wireless devices that are equipped with belt printers, credit card swipers and key encoders. Chris Stacey, Internet marketing manager, says the hotel uses wireless devices because of the volume of guests who check in between Thursday and Sunday every week.

"We had mobile check-in stands where people could check in, but the handhelds are a lot easier because we can serve guests anywhere in the hotel," he says.

Wire-free FedEx

As with the hotels, convenience and efficiency are two reasons FedEx expanded its wireless deployment in the past five years. Currently in the process of rolling out upwards of 10,000 access points, the shipping giant upgraded from 802.11 to 802.11b about 18 months ago. Since implementing a wireless LAN five years ago, FedEx estimates staff productivity to

“The biggest risk to deploying [wireless LANs] in the enterprise is the low-cost consumer gear that someone plugs in to the corporate net.”

Joe Baron

Network architect, Prudential Financial

be up 30%, which is easier to envision when you consider each package receives an average of 12 scans during its travels. Not only does wireless offer mobility, it also has safety advantages.

"People scanning aren't tethered to anything and can work freely without getting caught up in any wires," says FedEx

Dos & Don'ts for wireless LANs

Location, location, location

- ☐ **Do** perform extensive site surveys before deploying access points.
- ☐ **Don't** forget to routinely check access point locations to see if any alteration in the surrounding environment will interrupt connectivity.

Less is more

- ☐ **Do** limit the number of protocols used. Sticking to TCP/IP will reduce chances of clogging the wireless LAN.
- ☐ **Don't** deploy high-volume, bandwidth-hogging applications.

Keep it simple

- ☐ **Do** design an intuitive and simple user interface to help users adjust.
- ☐ **Don't** try to meet all user whims. Keep the wireless LAN as simple as possible.

Security smarts

- ☐ **Do** employ user identification/password, encryption, authentication and other security measures. Firewalls and VPNs are options for smaller wireless LANs.
- ☐ **Don't** trust the out-of-the-box security vendors offer.

Standard issue

- ☐ **Do** standardize access devices to ensure applications will work across laptops, PDAs and other handhelds.
- ☐ **Don't** assume users will always respect corporate rules regarding the wireless LAN. Performing constant network discoveries may uncover unauthorized devices.

— Denise Dubie, April Jacobs and Kathleen Ohlson

Director of Wireless Strategy Ken Pasley. FedEx plans to bring wireless technology to its fleet of wide-body planes to track packages and repair aircraft without a wired connection on the tarmac.

"We've dealt with airports for years, and they're fairly static, but with wireless we're finding different techniques to get access points out there," Pasley says. "Wireless is not mundane. This is an exciting business."

However, it's the "gee-whiz" aspect of today's wireless technologies that can bring down a wireless LAN, says Joe Baron, network architect at Prudential Financial in Newark, N.J. He says the thrill of easy, remote access makes employees want to tie their unauthorized PDAs and handhelds into the corporate wireless LAN.

"The biggest risk to deploying [wireless LANs] in the enterprise is the low-cost consumer gear that someone plugs in to the corporate net," Baron says.

Wireless security must extend to physical devices, as Earl Fischer discovered after deploying wireless LANs in each of Famous Footwear's more than 50 shoe stores. Fischer, vice president of information systems at the Madison, Wis., shoe retailer, says the Symbol SPT 1700 handhelds he designed for staffers to scan bar codes on shoes are often stolen. But because part of his wireless strategy is to "keep the devices as vanilla as possible" most thieves deposit the PDAs in nearby trash cans.

On the brighter side, Fischer says deploying wireless LANs reduced pricing errors by 75%.

With an access point per store, the handhelds tap back into the headquarters system via a VPN. Fischer strips down the Symbol devices to run only his proprietary applications that deal with inventory and pricing and keep each store updated weekly. He says keeping the devices simple lessens the learning curve for users.

"It's about adding convenience and efficiency that you wouldn't get with tethered devices," Fischer says, but adds that he doesn't worry about the people pocketing his devices eventually tapping into his corporate network. "If you plan properly, [wireless LANs] will help you do your business better, without putting that business any more at risk." ■



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Managing the storm of enterprise data

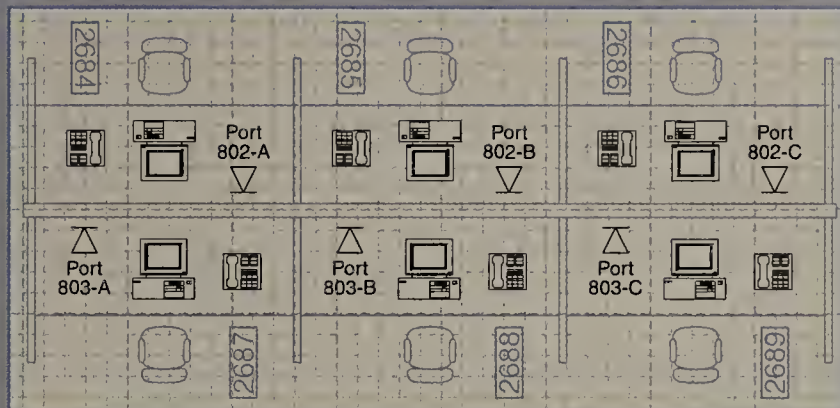
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What are your IPX-pectations?

IPX routing: relevant or relegated to the junk heap of networking? Some recent events have brought forth this question. From the beginning of "LAN time" through the late 1990s, the importance of IPX rose in conjunction with the popularity of Novell's

NetWare server operating system. As NetWare became ubiquitous, so did IPX. Indeed, the fact that Novell's "native" protocol was routable was a strong selling point against Microsoft, which had built its server on the unroutable NetBEUI, broadcast-

based protocol.

At some point in the late 1980s or early 1990s, IPX no doubt became the second-most prevalent protocol in enterprise networks, after IBM's SNA.

But as Novell and Microsoft fought for server supremacy, the rise of the Internet — and IP — neutralized Novell's routing advantage. Microsoft and Novell had to react to this new reality and overlay their application services onto an IP transport.

As the Layer 3 switch era dawned, IPX rapidly was falling in importance for two reasons. First, Microsoft was in the process of dethroning Novell as the king of servers. Second, Novell had developed a version of NetWare that delivered its services over IP rather than IPX. The "pure IP" version of NetWare, Version 5, shipped Sept. 14, 1998.

While customers did not convert overnight — and some didn't convert at all — the clear direction of an IP-everywhere corporate environment anchored to the Internet no doubt put IP conversion high on the lists of loyal NetWare customers.

IPX was in its twilight. Not long after the shipment of NetWare 5, The Tolly Group floated the idea of a multivendor benchmark of IPX routing performance. The response from the industry was united. Even though they all claimed to offer IPX routing support, no one was interested in participating in such a benchmark.

While we constantly benchmark Layer 2 and Layer 3 IP performance for switch vendors, not one requests that we run IPX numbers. Case closed, or so I thought.

In recent weeks, the subject has come up again in conjunction with a request for proposal qualification project on which The Tolly Group is working. Among the requirements is qualifying the packet throughput of IPX routing on Fast Ethernet and Gigabit Ethernet workgroup and core switches.

While doable, one has to ask: "Why?" NetWare 5.1 and 6 have since followed the first pure IP release so one has to believe that NetWare and IP work smoothly together.

Given the nonexistent demand for IPX throughput testing, we had no canned scripts ready. And, when we hunted through the test-tool documentation, we found that we had to craft all the scripts ourselves from scratch. The hidden message there is that so few people are asking for IPX scripts that the test-tool vendor has decided not to spend the time developing them.

So are you "high-end" IPX users out there? If so, what are you doing with IPX that could not be done better with IP? Should vendors be encouraged to prove their IPX routing throughput capabilities as well as their Layer 2 and IP, or are you looking for low-end routing performance to support a dwindling number of legacy NetWare/IPX applications? Speak up or forever hold your peace.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com or www.tolly.com.

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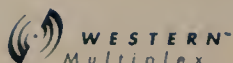
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Search tools key to customer service

Natural-language search engines reduce the hassle of browsing the Web.

■ BY ANN BEDNARZ

TD Waterhouse says that customers using its Web site to check an account balance or review their investment options will find accomplishing such tasks easier thanks to a new natural-language search engine.

The brokerage firm rolled out iPhrase Technologies' One Step software in just six weeks and made the new functions available in March. One Step attempts to live up to its name by eliminating some of the steps associated with traditional Web searches. Typically, if a visitor were to type "What is your fee schedule?" into a search box, the site would retrieve a list of docu-

ments containing the phrase "fee schedule," including a link to the brokerage's fee schedule somewhere among several other linked documents.

"Now it skips the middle step and takes you right to the fee schedule page," says Joe Kubikowski, a TD Waterhouse vice president. For queries that are not so clear-cut, the software delivers a list of related products and services. "How do I plan for my child's education?" for example, yields a range of TD Waterhouse education planning resources.

Natural-language search technology sets out to improve navigation by accommodating a range of user queries phrased in everyday language, and automatically adjusting for misspellings and abbreviations, for example. This advanced technology also can be used to customize search

Please don't go!

Companies see advanced search technology as a way to keep Web site visitors satisfied.

After all, more than half of users abandon Web browsing after only two clicks and

95%

leave after five clicks, according to Forrester Research.

results based on a visitor's access privileges, such as by responding to the question "What's my account balance?" by bringing the end user directly to his

account specifics.

Such search features are part of a wider umbrella of customer self-service products that aim to ease the burden on call centers and divert users to less-expensive online channels, where they can answer their own questions.

It's a crowded market — vendors competing for self-service dollars include Ask Jeeves, Banter, iPhrase, Kana Communications, Kanisa, noHold, RightNow Technologies and dozens more.

It's also a volatile market. Of the roughly 30 vendors that offer some sort of self-service tools, only 20% will survive, predicts Esteban Kolsky, senior analyst at Gartner. Most will be acquired or merge with other companies, he says. But the payoff could be big for those that stick around, as

See Searches, page 26

Short Takes

■ **Network Associates' McAfee division** has shipped the **McAfee Desktop Firewall 7.5**, an updated version of McAfee's personal firewall product, which now can be managed via the network-management console ePolicy Orchestrator. The McAfee Desktop Firewall, which no longer uses Pretty Good Privacy encryption, can block 17 attacks, including SYN flood, Smurf and Ping o' Death. McAfee Desktop Firewall is available for Windows 98, NT 4.0 and 2000. Pricing starts at \$30 per node for a two-year license, which includes a year of support.

■ **Mutek Solutions** last week made available its **AppSight for Java software** at the JavaOne conference in San Francisco. The software captures application performance data without affecting the application. Users can later replay the application sessions to help identify the cause of performance problems and either rewrite the application or reconfigure the network to better support the application. AppSight for Java is designed to spot problems in Java 2 Platform Enterprise Edition software. Mutek's trial versions of its software are available at www.mutek.com/products/download.html.

E-learning goes to head of the class

Higher education IT shops grapple with multimedia apps.

■ BY PHIL HOCHMUTH

WORCESTER, MASS. — College and university IT professionals gathered at a recent conference to discuss the extreme nature of their business — meeting the demand for advanced e-learning services while finding ways to provide day-to-day support to a diverse group of technology users.

The Northeast Regional Computer Program conference provided a forum for IT professionals and educators from Northeast colleges to exchange best practices for using technology to improve how schools educate students and operate daily.

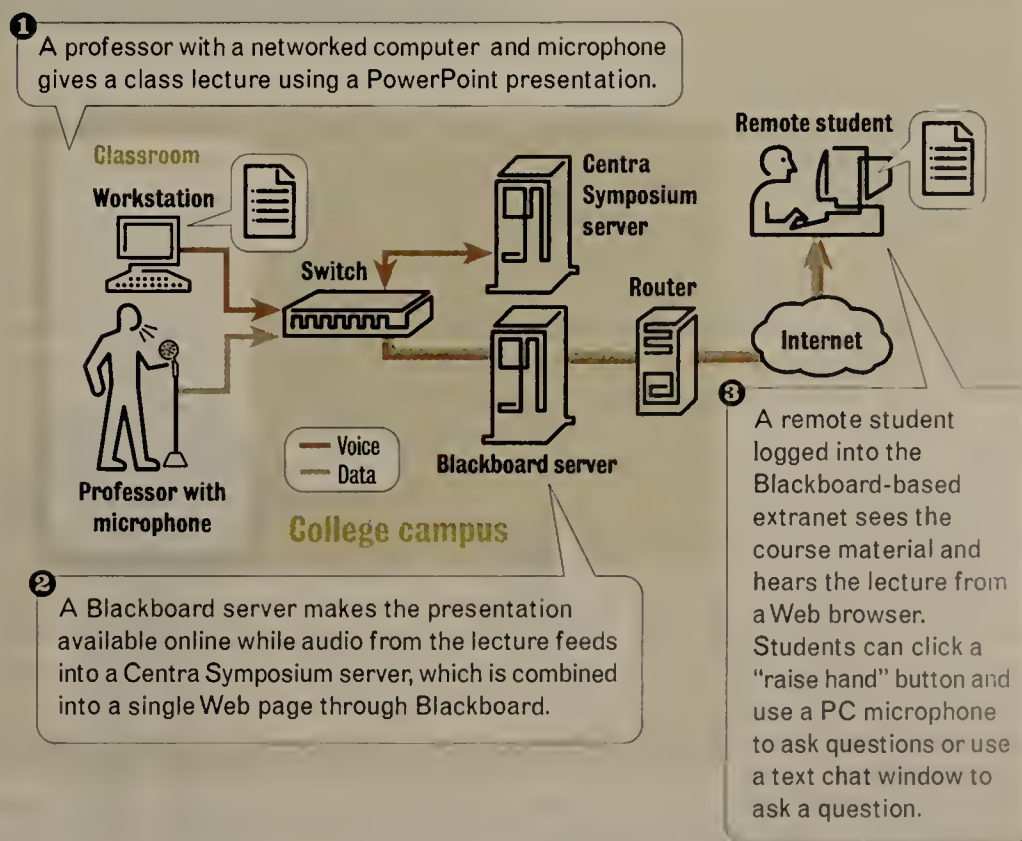
"Demand for multimedia [access] has been one of our biggest challenges," said Paul Fisher, associate director of the Teaching, Learning and Technology Center at Seton Hall University in South Orange, N.J. Fisher helped install a system that lets students view classes and lectures archived as RealNetwork video files over an intranet.

Two years ago, a chemistry professor asked Fisher's department to tape his courses and put them online. "After doing that, [the professor] found that 80% of his students did better on tests," he said. The system now provides archives of lectures for up to 12 courses per semester.

See Education, page 26

Online education

Bentley College uses voice-over-IP and Web technology to offer courses simultaneously in the classroom and online.



'NET
INSIDERScott
Bradner

Fortune magazine's April 1 edition has an article about the latest progress on an amazingly resilient idea: set-top boxes as money conduits from customers to providers. I think the article was serious but, considering the issue date, I cannot be sure.

A set-top box is that small bundle of electronics that sits between the cable that comes into your house and your TV set. It was designed to unscramble those extra cost channels so your TV can show them. (If you can believe the spam I get

Dreams about a box

about twice a day, you legally can do this on your own, but I'd suggest asking your cable provider if it's OK first.)

For about as long as there have been set-top boxes, cable TV companies have been trying to figure out how to use them to get customers to cheerfully pay more money. Mostly this has focused on variants of video on-demand. Carefully avoiding learning from experience, the cable companies have run a number of trials of this type of service. These trials culminated in the infamous Time Warner Orlando Full Service network, an all-singing, all-dancing, fully interactive entertainment and shopping extravaganza that had everything except an understanding of the Internet and enough customers willing to quintuple their cable bills to make it a financial success.

In hindsight, it never had a prayer of

being any kind of success. After all, Time Warner could not say convincingly why people in the trial, with the world at their fingertips and thousands of dollars worth of electronic gadgets in their houses, still went to the local video store to rent tapes.

What's different now? *Fortune* does not really say, but clearly video-buffering appliances such as TiVo seem to have hit the public's fancy, and the article mentions similar devices that satellite companies are now selling. But if the electronic VCR-like feature set of these inexpensive boxes satisfies much of what the customers want, as it seems to, what will generate the vast revenue that the cable and satellite companies have predicted for years?

One thing that is consistent between the Orlando trial and the *Fortune* article: Neither seems to understand the Internet. The Internet is not changed for the better

when gateways are installed between the user and the world. Gateways by themselves are enough of an issue because they tend to limit the flexibility of users to try new and innovative applications. Gateways controlled by someone other than the user, as the set-top box providers assume will be the case, are a very good way to get your life boxed in for you, rather than being able to soar. I guess that letting me soar is not in the business interest of the providers, but it's in my interest.

Disclaimer: Although Harvard's job is to open-boxed minds, the university did not express an opinion on set-top boxes. The above is my opinion.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Sun gives in to open source community

■ BY IDG NEWS SERVICE STAFF



JavaOne

SAN FRANCISCO — Sun last week answered a long-standing call from open source software developers, saying Java supporters will be able to submit some changes for the platform under open source licenses and receive financial support from Sun for their projects.

CEO Scott McNealy announced Sun's move toward a more open Java during a keynote address last week at the JavaOne conference. Sun

teamed with the Apache Software Foundation (ASF), maker of the popular Apache Server, to refine the procedures for open-source modifications of Java.

The changes are designed to address issues that have dogged open source companies looking to certify their products as Java-compatible through the Java Community Process (JCP) that governs

Java's maturation. Companies have been wary of submitting open changes for Java because of licensing issues, confidentiality concerns and the costs associated with running compatibility tests, said Jason Hunter, vice president of the ASF, joining McNealy on stage.

As a response to some of these concerns, all Sun-led Java Specification Requests (JSR) for standardizing a feature through the JCP can be submitted under an open source license. In addition, test kits also

can be submitted under the open licenses, Hunter said. Some existing JSRs also will be available for open source implementations, he said. Sun has submitted more current JSRs than any other vendor.

Sun also will dedicate part of its support staff to help open source developers and academic institutions build new features for Java. McNealy said, "We have just made the Java community tighter as a community and much broader as a community with one move." ■

Education

continued from page 25

At Bentley College in Waltham, Mass., accounting and taxation courses are offered simultaneously in class and online for remote students. The school uses an IP voice collaboration server called Centra Symposium by Centra Software and Blackboard, an online interactive classroom application that integrates digital course material — such as presentations and texts — into a database and lets students access the material online (see graphic). Centra lets the professor and remote students interact over IP voice or text chat, while Blackboard combines audio and visual elements into a single extranet Web page for students.

While the Centra server also is capable of supporting video, the quality of the video is poor because the school has to account for remote students with slow dial-up connections, said Phillip Knutel, Bentley's director of academic technology.

"Once the novelty wore off [with online video], we found that students would rather use available bandwidth for faster

downloading of PowerPoint slides and for better sound quality," Knutel said.

At the University of Rochester in New York, students and faculty put IP distance-learning to more artistic use. Students at the university's Eastman School of Music connect regularly with instructors from the Royal Scottish Academy of Music and Drama in Glasgow and the Queensland Conservatorium at Griffith University in Queensland, Australia, for music lectures, lessons and drama coaching. The school uses H.323 video and audio over Internet2, a high-bandwidth sister network to the Internet available to education and government institutions. Rochester plans to change its encoding technology from H.323 to MPEG in the near future, which will allow for CD-quality sound over the school's connection to its education partners across the Atlantic, said Kevin McPeak, director of technology and music production at the school.

In addition to multimedia distance learning projects, university IT shops are introducing applications to better manage the day-to-day task of supporting a large campus network with thousands of users.

The University of New Hampshire (UNH) in Durham recently installed call center software and reorganized its IT help desk to act more like a business customer service desk. UNH has combined help desk groups across campus into a single call center and introduced a rotating schedule that has involved more of the university's IT workers in the help desk.

"Having different people coming in and out gave us a broader base of knowledge [to help answer questions] at any given time," said Petr Brym, director of telecommunications and client services at UNH.

To better manage how the IT staff handles calls, UNH installed call-management and reporting software from Metis. The software lets UNH set up automated messages that can give quick answers to questions if there are systemwide problems. The software also lets the help desk track incidents and view statistics on call patterns and lost calls over time.

Since the Metis installation and reorganization of the help desk, Brym said, the number of dropped or "abandoned" help desk calls has decreased from 29% to 3%. ■

Searches

continued from page 25

Gartner estimates 70% of customer service interactions for information and remote transactions will be automated by 2005, whereas 25% to 30% are today.

Among natural-language search technology vendors, the companies that stand out combine natural language with self-learning, Kolsky says. Natural-language technology requires an underlying taxonomy, or classification system, that establishes links between available content and questions asked. Taxonomies consist of three layers: general vocabulary and grammar; terminology specific to a vertical industry; and company-specific content, such as proper product names.

Maintaining that taxonomy is critical as Web content changes. If it has to be done manually, that's a huge problem, Kolsky says. Self-learning automates the process of discovering new content and establishing contextual links to questions asked.

Meanwhile, development of vertical-specific taxonomies is driving financial services firms, in particular, to become early adopters of natural language technologies. Banter, for example, counts ABN AMRO, Royal Bank of Canada and Wells Fargo among its customers, and Ask Jeeves has attracted Datek Online, Wachovia (First Union) and PNC Financial Service Group. ■



More online!

CA's software has incorporated natural-language search engines and decision trees to guide users and support staff to answers.

DocFinder: 8731

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WEB FILTERING: Keeping content on the up-and-up.

Latest tools rein in employee Web use

■ BY CAROLYN DUFFY MARSAN

Employees at Tremco, a Beachwood, Ohio, manufacturer of roofing materials, can read the latest sports scores, buy collectibles on eBay and check their personal Hotmail accounts during lunch breaks and after-hours. But during office hours, these Web sites are blocked.

From the factory floor to the executive suite, the 700 employees in Tremco's 11 locations in the U.S. and Canada adhere to the same Web surfing rules by using a new Internet filtering device installed last October. Jeff Borsini, manager of IT services at Tremco, says the new device not only blocks offensive sites but ensures that Internet usage is work-related.

"The reason we bought this system is for the legal issues, to protect people in the workplace from inappropriate content," Borsini says. "We didn't feel that our people were doing awful stuff, but we did want them to log on to get to the Internet. We wanted ... to see who was going where, by user."

Once a simple way to block pornographic Web sites from the workplace, Internet filtering systems such as Tremco's have evolved into sophisticated tools for setting Internet usage policies, fostering employee productivity and supporting work/life balance.

Eighteen months ago, companies that pioneered the use of Internet filtering systems did so to block offensive Web sites because they feared liability. Now companies are buying these systems to ensure the high-speed Internet access they offer at work is used primarily for business.

With the latest Web filtering tools, network managers can limit Web surfing by the time of day or number of minutes. They can establish different Web access policies depending on an employee's job description or department. They can select from dozens of content categories to monitor or block, and they can override a blocked site at a user's request.

In addition to fine-grained policy-management features, these systems offer real-time alerting and extensive reports. Increasingly, the systems integrate with directory services and authentication software to ensure accurate tracking by user, rather than by PC.

Today's Web filtering tools "can be customized to let [employees] go ahead and do their nonbusiness-related activities during lunch," says Brian Burke, senior research analyst for Internet security at IDC. "But they can also track if someone is abusing their Internet access by trading stocks or shopping."

The new management features appear popular, with Internet filtering vendors reporting corporate sales up 30% to 50% during 2001, an otherwise difficult year for selling enterprise software applications. Among the companies now using these tools are AOL Time Warner, Northwestern Mutual Life, Sony Pictures and TRW.

IDC estimates the Web filtering market will grow from \$195 million in sales in 2001 to \$778 million by 2006.

"It's growing faster than the security and software markets," Burke says.

In most cases, a company's IT department buys and manages an Internet filtering system. However, these systems usually are put in place at the request of senior management, and Internet usage policies are established in conjunction with the human resources department.

These tools are often software running on a dedicated server, but they also are available as network appliances. They are set up behind the firewall at each Internet connection point. Most systems use a database to categorize Web sites, and the database is updated automatically each night. However, some systems have the ability to scan and categorize sites on the fly.

Most companies use these systems to block offensive content, such as pornography, violence and gambling. But network managers also have options to monitor or limit access to news, sports, entertainment and shopping sites. They can track use of job search sites and bandwidth-hogging music and video services.

Spalding, a Chicopee, Mass., maker of sporting goods, switched from an older, simpler Web filtering device to a

Elron Software's Web Inspector and Websense Enterprise shipped support for LDAP in March. SurfControl's SuperScout Web Filter and iPrism already offered directory services integration. This feature lets network managers use their existing directory structures for determining Internet usage policies by department or job function.

Companies are integrating Internet filtering with user authentication software so they can track Internet access by user, rather than by IP address. This is an important feature in environments that use dynamic IP addressing.

Tremco's Borsini says he selected iPrism because it offered integration with Novell NetWare's user authentication. Other systems only tracked usage by IP addresses, which he reassigns dynamically and would find difficult to track.

Product sampler

A few of many Web filtering systems on the market:

Company	Product	Description	Cost
Elron Software www.elronsw.com	Web Inspector	Server software that uses a dynamic filtering process rather than a block list to track 48 categories of Web content.	\$13 per user for 1,000 users, plus annual maintenance fees.
St. Bernard Software www.stbernard.com	iPrism	Network appliance with automatic nightly software updates for a list of 60 categories of Web content.	\$2,200 for 500-workstation license, plus \$4,800 annual subscription fee.
SurfControl www.surfcontrol.com	SuperScout Web Filter	Server software has a database that is updated daily to track 40 categories of Web content and a virtual agent that scans other, unclassified sites.	\$4,600 for a 250-user license, plus annual subscription fees. 30-day free trial.
Websense www.websense.com	Websense Enterprise	Server software has a database that is updated daily to track 75 categories of Web content.	Averages \$15 per user.

new system with extensive management features about six months ago. Spalding ran software called WebNOT, which was integrated with its Raptor firewall. But that software did not let Senior Network Manager Jeff Nelson override blocked sites — an issue that peeved users.

"I received three or four complaints per month from users who said they were trying to get to a valid site and were blocked," Nelson says. "Technically, I could go in and modify the block list, but the nightly updates would erase my changes."

Nelson wanted a new system that would let him override a blocked site, and he chose the iPrism appliance from St. Bernard Software. If users need to visit a site that's blocked, the iPrism appliance gives them Nelson's contact information.

"I get a lot more feedback now, which should mean the end users are more productive," Nelson says.

Spalding uses its iPrism device to block offensive sites for all users and to limit access to business-related sites including news and sports. Office workers have Internet access, while manufacturing employees do not.

Spalding doesn't allow open Web surfing at any time of the day because it is a 24-7 manufacturing operation.

"If you're on the Web at night, you're potentially tying up bandwidth for business uses," Nelson says.

The newest feature in Web filtering devices is support for the Lightweight Directory Access Protocol (LDAP).

"You have the same logon to get into the Novell network for the Internet," Borsini says. "If you don't authenticate, you don't get into the Internet. ... If you go to any PC in the building, the system will track your usage."

Similarly, Allegro Microsystems, a Worcester, Mass., semiconductor manufacturer, has integrated Websense Enterprise with its Windows NT authentication to ensure Internet access is tied to an employee's job description. Allegro uses Websense Enterprise to manage Internet usage for its 800 employees. Executives have open access to all but offensive sites, while manufacturing users have limited access to news, travel and government sites.

"As employees go out to the Internet and get authenticated, the system fits them into the policy set that we have designed for them," says Gary Gomes, network manager for Allegro.

Before installing Websense Enterprise, Allegro had problems with employees abusing Internet access in the manufacturing area, where PCs are shared. It couldn't track the individuals involved.

"We had people spending three hours per day on eBay," Gomes says. "Now we've locked that down."

In addition to user authentication, Gomes says he likes the extensive reporting tools in Websense Enterprise.

"I can look at logs of the top 10 users, the top 10 sites and the people who are getting blocked," Gomes says. "Then if issues come up, I can drill down." ■

Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

Vendors tout benefits of asset mgmt. services

■ BY JOHN FONTANA

IT executives looking for hosted services to cut costs and better manage network assets have new options from AssetMetrix and Intel.

AssetMetrix this week is adding asset-management and business-analysis features in Version 2.0 of its AssetMetrix hosted enterprise-computer inventory service. Last week, Intel debuted Intel LANDesk Asset Service, a hosted-inventory and asset-management service.

Asset management provides the means to track the life of servers and desktops, whether leased or purchased; plan for upgrades; and maintain licensing compliance. IT executives can collect a detailed list of changes over time, by machine or across a network. Experts say the software's ability to track license compliance and use provides big cost savings.

"The larger interest in asset management is in software maintenance, especially in licensing," says Fred Broussard, an analyst with IDC. Most of that concern is driven by recent licensing changes made by Microsoft and IBM, he says. "But that interest is also a continuing attempt by IT to get a handle on costs." Broussard says the hosted model provides flexibility for IT, but he says the age-old concern of mov-

ing important data outside the firewall is still an issue.

"Asset management is one of my strategic plans because it provides me with accountability," says Peter Walsh, vice president of IT for software developer EXE Technologies, which uses AssetMetrix.

With AssetMetrix, companies use e-mail or logon scripts to distribute a 170K-byte Asset Agent, which disappears from a machine after it collects data on 250 hardware assets — such as make, model and CPU — and on more than 45,000 software titles. This month, the company is adding features such as management of change, machine leases, service and support records, and warranties.

AssetMetrix also is adding 135 custom reports, such as Upgrade Analysis, which details machines that need to be upgraded or replaced to accommodate migrations.

"We are shifting ourselves from being backward-looking to helping the enterprise understand the business ramifications of making changes," says Paul Bodnoff, president of AssetMetrix.

Intel is taking the same approach with a focus on inventory collection, migration analysis and license compliance. The LANDesk Asset Service agent software is downloaded and installed through

See Asset management, page 30

Qwest Cyber Solutions: Not just 'apps on tap'

In February, Qwest Cyber Solutions, the independent application service provider launched by Qwest and KPMG in 1999, revealed that it would be combined with Qwest's hosting division. QCS CEO John Charters, who steered the company from its inception, stepped down. Taking over is Doug Stone, formerly Qwest's senior vice president of business development and strategic alliances. Network World Senior Writer Jennifer Mears recently spoke with Stone to find out what businesses can expect from Qwest's joint ASP and hosting division.

It's been a little more than a month since QCS was pulled into Qwest. How are things going?

I wouldn't define it the way you did. QCS has not been pulled into Qwest. That would imply that there is no separate biz unit anymore or separate legal corporation. QCS is still a very separate business. The management of QCS now also manages the hosting business for Qwest.

Could you talk about what you're planning to roll out?

Let me speak about the trend. My sense is that what I'm hearing from customers and what we are seeing from the trends is that having applications being managed plays a very important role in their businesses. In some cases, it remains exactly as it always has been: their sole IT outsourced environment. In some cases, it is a nice and important function, but they still have a lot of their IT inside. Across the board what I'm hearing is they're interested in having us advance our business model to be more of a managed solutions provider. And so with the hosting business being under my direction and Qwest being a major network vendor and our customers being interested in increased managed solutions, I think that's a logical direction for us to go.

When you say managed solutions, what are you talking about?

I think you can see us providing the CIOs, who are one of our major customer groups, a network solution all the way through to the application. You can see us continue to provide business continuity, disaster recovery and storage. You could even see us working with them on the development of new solutions that are unique to them. You'll see the corporation with all its assets and its interest on the part of the customers moving away from just strictly an

See Stone, page 30

Short Takes

■ **Cable & Wireless** is wasting no time after completing its purchase of **Exodus** earlier this year, rolling out Web hosting security services to enhance capabilities already available to Exodus customers. The packages unveiled last week are designed for firms that need help identifying potential network vulnerabilities, assessing security levels and managing security systems. **Essential Security Audit** evaluates security and prescribes improvements. **Enhanced Security** adds implementation and support of security systems.

Enterprise Security tacks on incident response, managed intrusion detection and content-integrity monitoring.

■ **Verizon** last week resubmitted its application to the Federal Communications Commission seeking approval to offer long-distance services in New Jersey. Verizon had withdrawn the application a week earlier after the FCC raised concerns about the rates Verizon was charging competitors for moving lines from a Verizon switch to a competitor's switch. In the new application, the rates Verizon will charge competitors for the line-switching service, known as hot-cuts, are the same as the rates Verizon charges in New York state. Verizon has already won long-distance approval in New York.



EYE ON THE CARRIERS

Lisa Pierce



Many 911 calls are not emergencies, and those calls contribute significantly to the problem of an overloaded 911 system.

In response, U.S. cities have begun implementing other "N11" systems to provide assistance for noncritical circumstances. These new systems will free up the scarce resources of 911 for serious emergencies, while still providing citizens access to other important resources.

Customer PBXs, Centrexes, key systems and IP telephony equipment must, of course, recognize these new numbers as legitimate — they cannot block them. Customers should verify this with ven-

Here are the players in the 'N11' lineup

dors. Similarly, all WAN providers, including those offering new voice-over-IP WAN services, must appropriately recognize and route these calls. These requirements apply to wireless providers, too.

In July 2000, the Federal Communications Commission officially reserved 211 for information and referral services. Since then, 211 systems have been used to refer callers on social/human services emergencies, such as providing information on emergency food, shelter, transportation, immigration, day care, elder care, medical and mental health services. About two dozen 211 systems are operational, with 42 in development.

Some cities support the service 24-7 and staff it with agents who speak several languages, while others make this assistance available only during business hours. Some 211 systems operate statewide.

The Canadian Radio-Television and Telecommunications Commission has approved the use of 211 for similar purposes.

However, despite the apparent popularity of 211 and similar systems, very few have been accredited by the Alliance of Information and Referral Systems, a national standards-setting body.

Meanwhile, 311 systems provide police and public-safety assistance for nonemergency calls that include illegally parked vehicles, vandalism, property crimes no longer in progress, and animal control problems. In addition to serving local citizens through more appropriate channels, the cities of Baltimore, Chicago and Houston have reported dramatic improvements in 911-system performance. Three-dozen 311 systems have been implemented across the nation.

Next on the growing list, 511 systems provide travel and traffic information, such as weather, accident and construction reports along major highways. Some cities are also providing mass-transit information. In some cases, these systems have been implemented statewide.

In the U.S., 711 systems are reserved for communication between the hearing and the deaf or hearing impaired. In Canada, 511 has been reserved for access to message relay services used by the hearing to communicate with the deaf, while 711 provides access to the same system by the deaf or hearing impaired.

Of course, all these new systems cost money to provide. In addition to costs associated with planning, staffing, systems and advertising, telecom providers must implement and update network database routing tables, and route N11 calls, often for no charge. Local carriers seek funding relief from state regulators or public utility commissions, which typically assess applicable monthly per-line fees on residences and businesses.

Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.

Q A

Stone

continued from page 29

'apps-on-tap' solution.

In the past, QCS had the ability to leverage Qwest data centers and its network. How are things different with this change?

The fact is that QCS probably did have the capability to engage with the hosting environment. But the way business units function with their customer base, their day-to-day activities, it's often difficult to get that level of intensity around joint products, the kinds of products you can get if you're managing the entire customer experience under one group. Now there's sort of a singular head that can cut to the chase and say, 'Yup, this is what I want to do, and these are my priorities.'

So what kind of things will be available for customers? Does this mean an ASP customer now could have access to storage or deeper network configurations, for example?

Well, you've got it. It's a combination of the capabilities that would come from a traditional network provider, those that would be logical in a hosted environment, those that are in an application-level environment, and those that are in a systems integration and consulting component. And the product bundles will include elements of all those, and will give customers the managed solutions that will provide them with more functionality than we had here before. Now we have to design some of those. We haven't finished that work.

Does this change reflect anything as far as what's going on in the ASP market?

That's a good question. I can't answer about the ASP market as a whole. I can say that it feels right. Our customers have applauded this move as the right thing to do. And they have begun to articulate to me the kinds of offerings that they think we should be providing with now very tight control over all these services. Some are really quite mundane, and some are very sophisticated. We're getting a real response from the customer base that to me is very positive and supportive of what we've chosen to do. ■

Nextel touts tool for wireless apps

■ BY DENISE PAPPALARDO

SAN FRANCISCO — Nextel is set to release a management tool that will let users more easily distribute wireless Java applications to employees.

The wireless service provider announced its Nextel Mobile Application Manager last week at the 2002 JavaOne conference. Network professionals will be able to use the product to specify which enterprise applications employees can access via their wireless handsets, as well as manage a library of Java tools.

"Nextel is well ahead of the other wireless carriers in offering enterprises a tool to distribute Java applications to an entire workforce," says Carl Zetie, a vice president at Giga Information Group.

Network managers access Mobile Application Manager through a secure Web site where they can upload applications developed in-house or set up parameters letting employees access 60 Nextel-developed applications. Previously, users were required to attach their wireless handsets directly to their desktop PC or

laptop to download Java applications. The new manager eliminates the need to tether a wireless device to a wired network.

All the applications are stored on a server hosted within Nextel's network. After a network manager uploads an application to the server, he can send out a text message to hundreds or thousands of employees notifying them, for example, that a new sales reporting tool is available.

Users must have a Java-enabled handset and subscribe to Nextel's Wireless Web data service. Nextel customers can choose from one of six Motorola handsets that support Java applications.

Mobile Application Manager is based on Mobile Application System developed by 4thpass, a software vendor. Nextel also worked with Motorola to incorporate the manager with its "over-the-air download" system from Motorola, says Bob Ewald, director of wireless data services at Nextel.

Nextel is ahead of wireless competitors such as Verizon Wireless and Sprint PCS because it already has a packet network

in place, Zetie says. But Nextel's market advantage will be short-lived because its network is based on Motorola's proprietary Iden wireless technology. Nearly all other national service providers are in the process of upgrading their networks to standards-based, next-generation technology, he says.

Mobile Application Manager is expected to be available by the end of June at no additional costs to most Nextel wireless data users.

Customers who sign up for minimal data-usage plans will have to pay an undetermined fee to use the manager. ■



More online!

The latest Web-services news, plus research links.

DocFinder: 8732

Asset management

continued from page 29

modification of logon scripts. The agent disappears once it collects data, which is transmitted using Secure Sockets Layer. Intel is initially targeting smaller

companies but plans to release a version of the software that can be deployed within an enterprise network. Users can view their inventory data and run reports through a secure Web page, or can download the data into Microsoft Excel and

analyze it locally.

LANDesk Asset Service is hosted by Intel and costs \$7 per node per month. The AssetMetrix service, which will be sold through the company and service providers, costs \$15 per computer per year. Both are available now. ■



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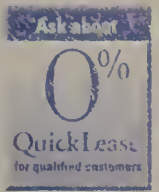
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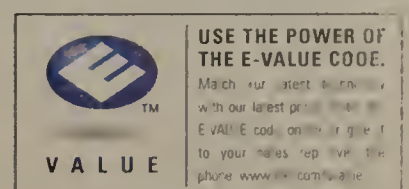
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Convedia pops low-end server for packet voice

■ BY TIM GREENE

VANCOUVER, BRITISH COLUMBIA — Convedia is introducing a low-end version of its media server designed for smaller packet voice service providers, larger providers with smaller locations and large companies.

CMS-1000 is a single device that can deliver custom IP telephony services such as voice mail, automated attendants and text-to-speech messaging. It is a scaled-down

version of Convedia's carrier-class CMS-6000.

Media servers provide processing for voice network applications such as voice recognition and playing announcements that are hosted on separate application servers. Rather than each application having its own processing hardware, they share the media server, saving on the cost of equipment and reducing the number of devices to manage.

A corporation that provides voice recognition or touch-tone navigation of its customer-service phone system and also has audioconference bridging could use a CMS-1000 to process both applications.

"These [devices] are for larger enterprises that have their own dedicated IP networks, like financial firms, where security is important," says Jon Arnold, an analyst with Frost & Sullivan.

Convedia says a media server makes economic sense even if the customer is running only one application on it. As the number of applications increases, the more affordable it becomes, the company says.

A traditional audioconference bridge with dedicated hardware costs \$1,000 per port, and a CMS-1000 can support the same service for \$250 per port, Convedia says.

Service providers that host these services

Media server for the rest of us

Convedia's CMS-1000 media server is designed to add phone services to smaller IP voice networks.

- Handles up to 300 phone calls.
- Supports links to media gateways, softswitches and application servers.
- Provides processing for audio bridging, playing announcements and other voice services.



for corporate customers might dedicate CMS-1000s to customers who, for security reasons, don't want to share hardware with other customers, Convedia says.

Convedia breaks down the individual tasks the media server performs into seven categories: playing announcements; collecting and generating touch tones; bridging audio; recording and playing audio; performing text-to-speech translation; recognizing speech; and performing real-time video processing. The company says it will support video in 2003 and later will sup-

port text-to-speech.

Founded in 1996, Convedia faces start-up competitors IPUnity, SnowShore and ThinkEngine. None of these companies offer a media server as small as CMS-1000, which supports up to 300 simultaneous calls.

Morover, Convedia makes only media servers, unlike some of its competitors. It partners with other vendors to provide applications, softswitches and media gateways.

These partners include Pactolus, Iperia, Syndeo, Comgates, Unisphere Networks and Convergent Networks.

In a packet network, a media server would connect to media gateways that take in customer traffic, application servers and softswitches. To communicate with these other network devices, CMS-1000 supports Session

Initiation Protocol, Media Gateway Control Protocol, MEGACO, voice XML, ATM Adaptation Layer and Real-time Transport Protocol.

While media servers are not used widely now, service providers that are testing them will start rolling out media server-based services in six to 12 months, Arnold says.

CMS-1000 will be available midyear at an entry-level cost of \$22,000.

Convedia: www.convedia.com

Short Takes

■ **Sheer Networks** last week said it is integrating its service provisioning software with **Redback Networks' Subscriber Management System**. Combining Sheer's **MetroCentral Broadband Operating System** with Redback's SMS will let service providers detect in-service SMS device properties, physical and logical inventory, link status, path management and connection parameters. Based on this information, Sheer MetroCentral will provision, activate and monitor SMS connections. MetroCentral will be integrated with all three of Redback's SMS platforms: the SMS 500, SMS 1800 and SMS 10000. www.redback.com; www.sheer-networks.com

■ **Unisphere Networks** last week unveiled a blade for its **ERX edge switch/router** designed to let carriers offer network-based VPN services and support customer premises-based VPNs. The hardware can accept IP Security packets from customer sites and switch them through the core of the provider's network at Layer 2, letting users who have a VPN continue using existing gear. The new card also supports virtual routers, which are separate internal routing tables grouped by customer. The IPSec blade can support 5,000 VPN tunnels for a total of 1G bit/sec throughput. The module is available now and costs \$55,000. www.unispherenetworks.com

Secretive start-up slips out some info

Procket announces new board members, says product details to come this year.

■ BY JIM DUFFY

MILPITAS, CALIF — Procket Networks, a secretive start-up that's building next-generation IP infrastructure equipment, is slowly emerging from hiding.

The company, founded three years ago to develop high-speed packet processors, has raised \$272 million after three rounds of funding. It is developing systems that are in various stages of trial with 15 to 20 global carriers. These trials will continue through the year, the company says.

Procket last week added two people to its board of directors: founder and Chief Scientist Tony Li, a highly regarded routing software engineer who helped design Cisco's market-leading Internet routers; and Network Appliance CEO Dan Warmenhoven, a longtime computer and network industry veteran.

Yet the company remains tight-lipped

about its products and their availability. Industry insiders say they think Procket is developing a high-speed backbone routing system that will compete against Cisco and Juniper Networks.

But instead of "limiting" Procket by defining it as the next maker of a hot IP box, the company would rather be considered the designer of a reliable multiservice packet network architecture, says CEO Randall Kruep.

"[We're] developing a new networkwide architecture," Kruep says. "We're really driving the availability, consistency and predictability of the network. Our vision and intent is to play networkwide."

Availability of products to support this architecture will be disclosed later this year, he says.

"We've passed through most of the serious gates in terms of risk and we're feeling very comfortable, but we still have a sub-

stantial amount of work to do in order to engage the market," Kruep says.

The company's investors do not include carriers or vendors, but Procket will have "significant" partnerships with these parties and will disclose them at a later date, Kruep says. ■



More online!

Read why Procket Networks is one of
Network World's start-ups
to watch.

DocFinder: 8729

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Technology update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Hybrid firewalls can dig up worms

■ BY RICK SMITH

Recent attacks, such as the Nimda and Code Red worms, have made it look as if firewalls don't offer enough protection. In fact, these attacks simply highlight the differences between garden-variety firewalls and more sophisticated ones.

Serving as a high-speed inspector, a firewall accepts or rejects traffic based on predefined rules. A more detailed inspection provides a higher level of security.

In general, firewalls work like Internet routers. Routers examine the header of each packet they receive and route the packet from one network interface to another based on the packet's destination IP address. Firewalls also look at each packet they receive and make their access-control decisions according to the packet's contents.

Most routers include a simple firewalling mechanism called packet filtering. In packet filtering, a firewall looks at each packet and uses the packet's header information to decide if the packet should be delivered or discarded. The decision most often relies on the packet's port number, which generally indicates what type of application traffic the packet carries.

File transfers via FTP generally use ports 21 and 22; e-mail via Simple Mail Transfer Protocol generally uses port 25; and Web pages via HTTP generally use port 80. Some sites simply configure their firewalls to allow all traffic related to acceptable protocols and reject all other traffic.

Packet filtering is simple and fast, but its simplicity means it is unable to detect attacks that are embedded in the application protocols themselves. For example,

Code Red and Nimda used HTTP messages to infect servers running Microsoft Internet Information Server.

What happens is the worm software, running on an infected computer, transmits an HTTP "get" message to the server under attack. The message is designed to generate a buffer-overrun error in the server. This tricks the server into executing a program that installs a "back door" to give the worm access to the server computer.

In this example, the back door lets the worm execute DOS commands embedded in subsequent HTTP commands. Once the back door is in place, the worm uses it to invoke a variant of FTP to install the rest of the worm's software onto the newly infected computer.

Packet filtering can't stop these worms because it looks in the wrong places to detect attacks. Not even a "stateful" packet filter keeps track of enough information to

distinguish between legitimate HTTP traffic and that which carries a worm infection.

Instead, the firewall must provide an application layer gateway or proxy, which goes beyond the inspection of packet headers. A Web proxy handles HTTP traffic. The proxy actually reconstructs HTTP messages that may span two or more packets and makes its access-control decision based on the contents of the entire message, not just one packet. While many sites use Web proxies to cache Web pages, a proxy in a firewall may also enforce access restrictions on Web pages or examine messages for signs of attempted infections.

A proxy can ensure that messages conform to RFC standards and also provide advanced filtering controls such as Unicode-character enforcement, URL-length checks and host-header validation. These controls provide a number of ways to detect and block an attack: The proxy could reject messages that were unnecessarily long or those trying to execute the script root.exe.

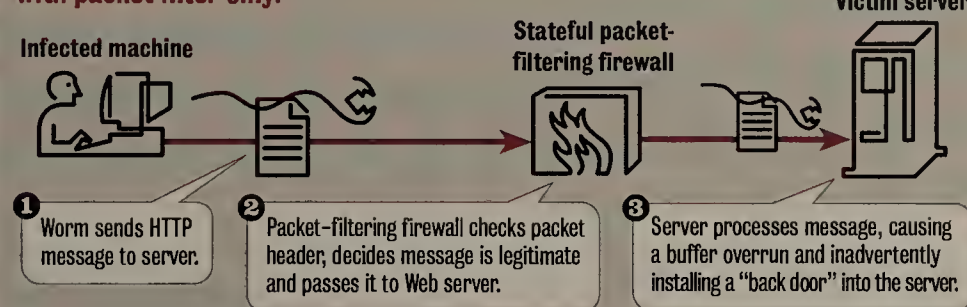
Often, the best choice is a firewall that offers a hybrid architecture combining packet filtering and application layer proxies. This lets organizations tailor their firewall protection to optimize performance while maintaining the appropriate level of security for the corresponding risk. Hybrid firewalls use simple packet filtering to provide high throughput for lowest-risk traffic, stateful inspection for slightly riskier traffic, and the application layer gateway where the risk of data-driven attacks is highest.

Smith is senior principal engineer at Secure Computing. He can be reached at rick_smith@securecomputing.com.

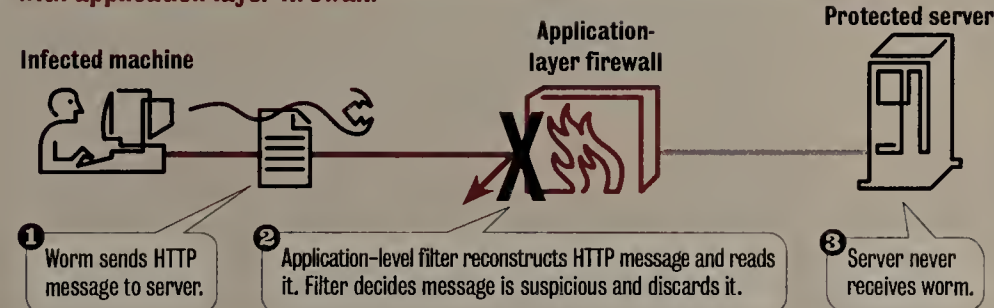
■ HOW IT WORKS Hybrid firewalls

A hybrid firewall that combines packet-filtering and application-layer gateways can effectively block the latest worms.

With packet filter only:



With application-layer firewall:



Ask Dr. Internet

By Steve Blass

How can I set up a hotel-type environment, where laptops with all sorts of different TCP/IP configurations are put on the network and allowed to access the Internet without requiring the laptops to be reconfigured?

Start by assuming that travelers carry laptops configured to obtain their IP addresses dynamically using Dynamic Host Configuration Protocol and then provide DHCP services on your network for your Internet access connections.

Whether you provide connectivity over existing cabling, wireless LANs or some type of Ethernet, a guest would plug a laptop into your network and obtain dynamic configuration settings from your DHCP server to set his IP address, DNS server addresses and the address of your Internet gateway as his default network route. With this approach, guests can usually retrieve e-mail and use the Web. Sending e-mail may be more difficult because mail relaying from remote LANs is blocked by most firewalls. Many travel-

ers work around this by using Web-based mail gateways. Supporting guest's VPN software is easiest with a clear path to the Internet using a gateway router that supports current standards and an internal LAN infrastructure that presents itself to guests' laptops as a plain Ethernet connection so they can simply plug and play.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD
INSIDE THE
NETWORK
MACHINEMark
Gibbs

Last week we delved into SOAP and casually tossed out the term “namespace.” While we didn’t make much of it at the time, the fact is that namespaces are a crucial component of XML and, by extension, of SOAP and Web services.

You see, one of the problems of XML is its tremendous flexibility. For example, in the case of library data, the tag “name” could mean an author’s name or a publisher’s name, depending on the intention of the XML data set it appears in. One library’s XML description of a book might be:

```
<libraryitem>
  <title>The Truth Machine</title>
  <publisher>
    <name>Del Rey Books</name>
  </publisher>
  <author>
    <name>James L. Halperin</
name>
  </author>
</libraryitem>
```

Making a namespace for yourself

If you don’t know the structure of a libraryitem, handing the XML data to a computer is likely to cause problems with understanding the attribute name.

So to make our intentions clear, we’ll group the tags (properly called “elements”) we use in an XML document under a name that provides, in effect, a category for all the tags under it. To define the architecture of the elements, we’ll create a definition of the category using a Document Type Definition (DTD) or the more powerful XML Schema (XSD) specification.

An XSD schema is easier to understand than a DTD because it is written in XML. It also is far more comprehensive in its ability to characterize how the content of an XML file is structured. We’ll visit XSD next week, as it is a huge topic.

So let us declare a namespace:

```
<vii:libraryitem xmlns:vii = “http://www.gibbs.com/demoschema>
```

What this defines is where the definition of the namespace “vii” can be found and that the element libraryitem is part of that namespace.

You may have noticed that the URL for the namespace definition points to a subdirectory that may contain a DTD or XSD. If there is no definition file, the result is merely declaring a unique identity, in this case, for the namespace “vii.”

Any reference to another namespace also named “vii” but linked to a different URL would define a different namespace. Now, although a single XML document can reference multiple namespaces, duplicate names for namespace are not supported.

One of the problems of XML is its tremendous flexibility.

So here’s our file with all of the elements explicitly defined as belonging to the “vii” namespace:

```
<vii:libraryitem xmlns:vii = “http://www.gibbs.com/demoschema>
  <vii:title>The Truth Machine</vii:title>
  <vii:publisher>
    <vii:name>Del Rey Books</
vii:name>
  </vii:publisher>
  <vii:author>
    <vii:name>James L. Halperin</
vii:name>
  </vii:author>
</vii:libraryitem>
```

As long as the only namespace in use is

“vii” we could omit all references to it in all the elements between the first and last line (in other words, except for the first and last line, the content would be identical with the first example we showed).

Of course, if we had two or more schemas we could reference multiple namespaces with different names. Thus:

```
<libraryitem
  xmlns:vii = “http://www.gibbs.com/demoschema
  xmlns:gac = “http://www.vitallyimportantinformation.com/schema>
```

So if we refer to elements such as “vii:name” and “gac:name” it’s obvious the schema for each use of “name” is different.

Remember that an XML tag is made up of: `<element_name attribute_name = “attribute_value”> element_value </tag_name>`

We even can define attributes as belonging to specific namespaces, different from the namespaces of the elements that possess the attributes, thus:

```
<vii:temperature gac:unit=“Celsius”>
36</vii:temperature>
```

Next week, XSD. Whoopee!

Comments to the namespace gearhead@gibbs.com.



Cool Tools

Quick takes
on high tech toys
By Keith Shaw

Finding coolness at CTIA Wireless show

The recent CTIA Wireless show in Orlando showcased mobile phones and other wireless Internet devices. There were tons of handsets — too many to mention here. *Network World’s* Mobile Computing e-mail newsletter will highlight them over the next two weeks (sign up at www.nwwsubscribe.com/foc15/). Instead, I want to shine the Cool Tools spotlight on some technologies and products that knocked me out at the show.

Digit Wireless improves keypad text entry

While the features of the mobile phone have improved, users are still limited by the numeric keypad. Predictive text-input software helps, but it doesn’t solve the problem.

Now though, difficult text entry may soon be over.

Digit Wireless has taken mobile phone keypads 3-D. It has created “hills” in the spaces between the numbers on a keypad for letters, and “valleys” for the numbers.

To type a letter, just push the appropriate key to type a number, push

the four letters that surround that number, and the number will register. It’s easier to see this than describe it, but the technology reduces keystrokes compared with using the “tap three times for one letter” method or predictive text-entry software. Digit Wireless calls the hardware/software combination Fastap, and the company was at CTIA to pitch the keypads to mobile phone handset manufacturers for use in Europe and the Americas.

If Digit Wireless is successful in convincing handset makers to use the keypads, the resulting ease of use with mobile devices should result in more acceptance of using mobile phones for e-mail and text messages.

Go to www.digitwireless.com.

Jabra has Bluetooth headset under \$100

Many companies announced they will come out with Bluetooth headsets, but only Jabra said its headset will be less than \$100. By September, the company hopes to begin shipping its \$99 Free-Speak Wireless Headset, which would let users “cut the cord” between their hands-free headset and wireless phone.

And Jabra takes this a step further for users without Bluetooth-enabled phones. For \$179, you can get an adapter that plugs into your phone and gives you Bluetooth

The raised letters on Digit Wireless’ keypad could revolutionize text entry on mobile devices.



Jabra’s Bluetooth headset will sell for under \$100.

connectivity. The adapter acts as a holder and recharger for the headset. A Jabra spokesman says the headset can get about three hours of talk time, and an average of four days in standby mode. The headset is made of flexible material similar to Jabra’s EarGels. Head to www.jabra.com for more information.

Plantronics announced that its M1500 Cordless Headset with Bluetooth would be available in early summer for \$200. The M1500 includes a cordless Bluetooth headset and adapter that plugs into the headset jack of most phones. Different models would be offered for any headset-ready phone, including Nokia, Motorola and Samsung models. Go to www.plantronics.com for more information.

Sony Ericsson also announced a Bluetooth hands-free headset, the HBH-30, which will be on the market in the second quarter and will be compatible with many of Sony Ericsson’s new phone models. Pricing hasn’t been announced. Go to www.sonyericsson.com for details.

Shaw can be reached at kshaw@nww.com.



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EDITORIAL

John Gallant

A NetWorld+ Interop treat for you

Many of you already plan to attend the NetWorld+Interop conference next month in Las Vegas, but if you're on the fence about going I hope this convinces you to head out to Sun City.

With the help of the show's organizers, I've pulled together a special plenary session on security — a topic that has rocketed to the top of your list of "things that keep me up at night."

We've got an all-star group of speakers who will explore the most dangerous threats to our networks, the new tools that will help us deal with those threats and the issues that will shape security.

The session is called "Cyberland defense: Rethinking network security for a dangerous world." It will be held at 5 p.m. on May 8.

Joining me on stage will be:

- Robert Thomas, CEO of NetScreen Technologies, which provides high-performance firewall and VPN systems.
- Sandra England, executive vice president for business development and strategic research with Network Associates, one of the biggest names in security.
- Christopher Klaus, founder and CTO for Internet Security Systems, which is well-known for its intrusion detection and response technologies.
- Henry Fiallo, CEO of Enterasys Networks, which has made security a key facet of its infrastructure strategy.
- Keith Rhodes, chief technologist for the U.S. General Accounting Office. Rhodes has brought his deep security expertise to bear on a variety of security efforts within the federal government.

Our focus will be on defining where our public and private networks are most vulnerable, and exploring what corporations and government agencies need to do to shore up these critical infrastructure resources. We'll also discuss some innovative technologies that could — maybe — finally help us get ahead of the thugs, crooks, nuts and others who want to disrupt our e-business and personal communications.

This session builds upon the special Webcast we conducted in March, featuring Howard Schmidt, the government's top infrastructure protection guru. You can view that Webcast by going to www.nwfusion.com, DocFinder: 8727.

I could use your help to make this N+I session a success. What questions do you want me to ask these experts? Which issues are most pressing for you? Please drop me an e-mail with your ideas and thoughts. I'll try to ensure that they get answered.

Thanks and I hope to see you there.

— John Gallant
Editorial director
jgallant@nww.com

opinions!

Setting the RBOCs free

Your editorial "Set the RBOCs free and let the fun begin" (www.nwfusion.com, DocFinder: 8725) ignores the fact that cable companies have opened their services to competitors. I can now use AOL or EarthLink as my ISP over my Road Runner service. The regional Bell operating companies have interfered with the competitive local exchange carrier rollouts and have driven CLECs out of business even after paying millions of dollars in fines.

The Tauzin-Dingell bill will reward this anticompetitive behavior. Tauzin-Dingell also will hurt the interexchange carriers (IXC). AT&T is prohibited from selling local phone service, but the RBOCs will be allowed to sell long-distance service. Tauzin-Dingell is a sweetheart deal for the RBOCs, but the IXCs and CLECs get the shaft.

Eric Elder
Palm Harbor, Fla.

The RBOCs have stifled communication innovation for years. Hundreds of small, innovative telecom equipment companies are dying right alongside the CLECs because no RBOC is going to deploy next-generation equipment that makes obsolete its existing infrastructure.

The RBOCs do not make any investment if they cannot get safe returns. They have been selling off "hard-to-serve" rural markets for 15 years and have promised fiber to the home for even longer.

As for letting market power decide, surely you must be joking. The RBOC monopolies have been built over 50 years with guaranteed returns under regulation. They don't compete. Who do you think is going to provide a competitive alternative to the RBOCs? Cable plant does not cover business districts, and wireless has limited application.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Without competition we'll be back to limited services, poor service and no price pressures. Tauzin-Dingell is an attempt to extend the RBOCs' monopoly into the 21st century. Deregulated monopolies without choice in providers are bad for customers.

Dan Moffat
CEO
New Edge Networks
Vancouver, Wash.

Don't let the RBOCs defy or change the law to suit them. They have had a monopoly for 100 years, and while they did a good job building the network, it is woefully out of date now. They alone are the biggest single impediment to broadband. Their heavy-handed and frequently underhanded behavior should not be rewarded.

Scott Walters
Fort Worth, Texas

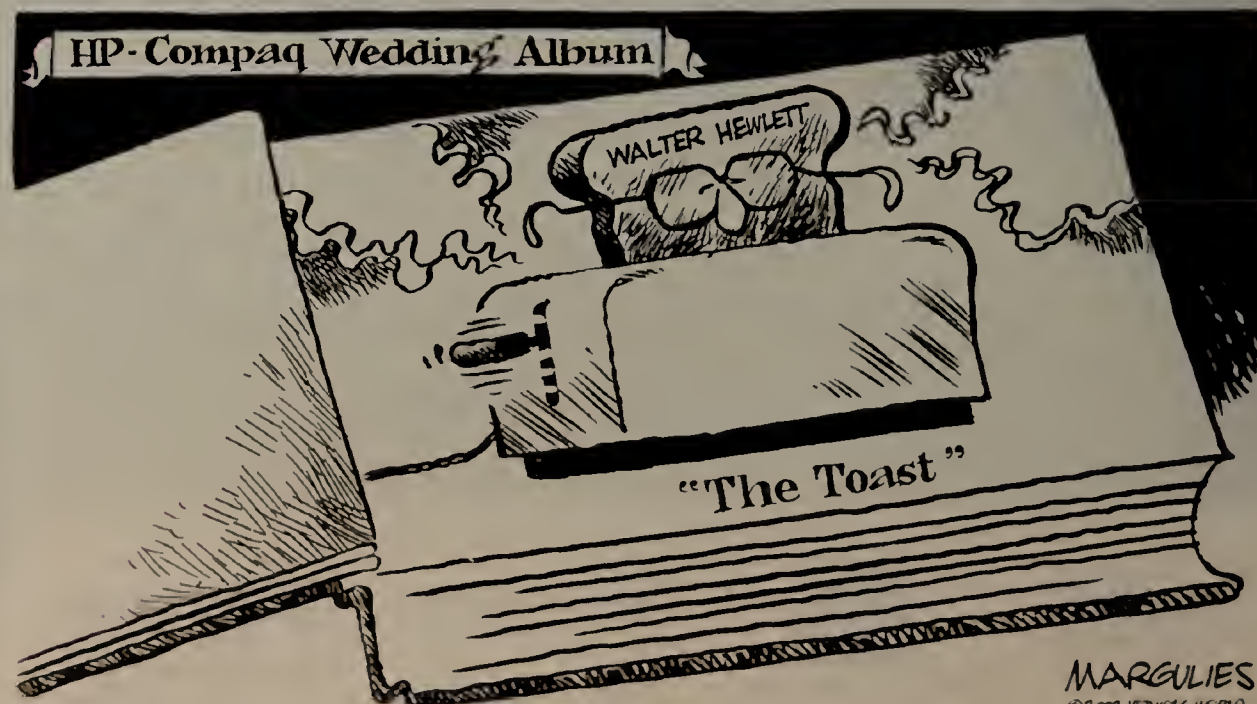
Competition is not the way to close the digital-divide issue. It will only aggravate it because businessmen behaving rationally will wire last the areas they believe have the least ability to pay for enhanced capabilities.

What we really need to do is make broadband access mandated as part of next-generation universal service, put a timetable for cable and telephone company providers to pass X number of households, let consumers pick their primary broadband provider, rejigger how universal service will be subsidized, and make everyone follow an equal-access/equal-interconnection regime. That way nobody can become a victim of digital redlining, and consumers get freedom of choice in access to facilities and content.

Peter Bernstein
President
Infonautics Consulting
Ramsey, N.J.



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TOTALLY UNPLUGGED

Ira Brodsky

Wireless is fast becoming the world's dominant telecom technology, and enterprise networks are next on the list of things to be untethered.

Consider these facts. More than 400 million wireless phones are sold annually. This year, the total

number of wireless phones in use worldwide will for the first time surpass the total number of wired phones in use. Unlike wired phones, the majority of wireless phones are digital. Wherever digital takes hold, prices come down and performance goes up. Wireless networks are no exception.

Many pundits and network managers remain skeptical. They complain that wireless is less reliable, more expensive, insecure and plagued by competing standards. These are legitimate concerns. But progress is being made on all fronts.

For personal-area networks, there are new applications for which wireless has no serious competition. Soon, all portable electronic devices — from mobile phones to notebook PCs to digital cameras — will be able to exchange data at high speeds merely by coming within proximity of each other. No more fumbling with cables.

Wireless LANs have been widely used in warehouse, factory and retail-floor automation for some time. Use in offices has skyrocketed during the past few years as inexpensive IEEE 802.11b products have emerged, and wireless LAN access points are being deployed in public

areas such as airports and hotels.

In the metropolitan-area network, 3G wireless networks are taking off in Asia and North America. Korea has nearly 5 million 3G users. 3G networks are rolling out nationwide this year in the U.S. and Japan. Fixed wireless links also are spreading in campus and cross-town applications.

In wireless WANs, the use of satellite networks in mobile applications is growing. Inmarsat enables voice and data communications on land, in the air, and at sea. Qualcomm's Omnitrac service serves

more than 400,000 long-haul trucks. And millions are using the Global Positioning System in emergency, tracking and navigation applications.

Wireless evangelists have said for years that field automation is ripe for wireless. Finally, wireless is ripe for the field.

Don't just take my word for it. Beginning this week, some of the biggest names in networking will join me in presenting a series of free, *Network World* Tech Update seminars: "Integrating and Managing Wireless in Your Network." Cisco, Symbol Technologies, Western Multiplex and Funk Software will be among those on this coast-to-coast tour. (To register, go to www.nwfusion.com, DocFinder: 8724.)

Network executives of the world, don't get blind-sided or left behind. You have nothing to lose but your copper tethers.

Brodsky is president of Datacomm Research in Chesterfield, Mo. He can be reached at ibrodsky@datacommresearch.com.

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Wireless evangelists have said for years that field automation is ripe for wireless.



REALITY CHECK

Thomas Nolle

Lucent's announcement of its TMX 880 switch might be one of the pivotal events of what I hope will become known as the "telecom recovery period." The product addresses many of the key issues the industry is facing now. One way or the other, the 880 is likely to touch every player in the market.

Voice profits are falling off rapidly for all carriers, and legacy data services such as ATM and frame relay offer relatively little incremental growth opportunity. IP is the future, but we've had so many false starts getting to profitable IP that Wall Street has about given up. That's the first reason why the 880 is so important. By combining an IP-centric feature — Multi-protocol Label Switching (MPLS) — with legacy ATM switching, Lucent has given carriers a vehicle for creating converged multi-service networks that can draw on the revenue of today's market until IP profits materialize.

The second reason the 880 is important is that it addresses a technical problem with MPLS: MPLS paths look a lot like frame relay or ATM virtual circuits, but they're not identical. Lucent promises an implementation of MPLS that's, in Lucent's words, "connection-oriented," meaning that it would behave like ATM or frame relay in nearly all respects. Carriers would like to use MPLS for voice and data transport, but they've been deterred because MPLS doesn't assure in-order arrival of packets, provide unambiguous notifications of network faults, support full quality-of-service guarantees or provide virtual circuit levels of security without parallel encryption. Lucent says the 880 can do all this.

But the final reason for the 880's importance is that it puts MPLS capability into the core and lets MPLS-based services deploy immediately. Yes, that would include IP services, but we know those services aren't immediately profitable based on our recent experience with the ISPs. What would be really important would be if the marketplace began to deploy services such as frame relay and ATM over MPLS instead of ATM, and MPLS, not ATM, were to form the basis for packet voice networks.

The prospect of MPLS in the network core begs the question of whether MPLS needs to get closer to the user than that. It would be pos-

sible to use "connection-oriented" MPLS to create frame relay and ATM services, and support transparent LAN services or wide-area virtual LANs. It also would be possible to continue to use the ATM features of a box such as the 880 to support legacy services and save MPLS as a feature for an IP-dominated world.

Which will it be? It's an important question because if the next wave of facility-based carrier investment at the edge goes strongly in an ATM/frame relay direction, it will deter MPLS playing a direct revenue-generating role. But keeping the edge ATM-oriented is in the interest of the current ATM incumbents, like Lucent, that stand to gain by reinvestment in legacy edge technology.

Despite this, there's positive news for MPLS. Start-ups with MPLS edge capabilities, such as WaveSmith Networks and Equipe Communications, are suddenly in the news. Other MPLS edge players say off the record that they're attracting carrier interest — and big carriers at that. Will Lucent's move and the inevitable countermoves of Lucent's competitors create a real convergence on MPLS?

For users, that might be a good thing. Service features are created at the edge, and healthy competition there could ignite a war among vendors aimed at creating new features that lie in that zone between Level 2 virtual circuits and Level 3 routing. That zone may be the next one carriers plumb for profits and enterprise planners look to for service innovations.

But it's too soon to tell just what might happen in this area. The regional Bell operating companies are hedging on their edge plans, possibly because the regulatory framework isn't yet clear. Incumbent equipment vendors are debating whether to emphasize "new MPLS" edge devices or simply modernize frame relay and ATM access technology. With the 880, Lucent has positioned MPLS firmly in the core, but carriers may have to vote with their dollars to resolve the question of MPLS in the edge.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimi-corp.com.

Lessons from Lucent's 880 switch

One way or the other, the 880 is likely to touch every player in the market.

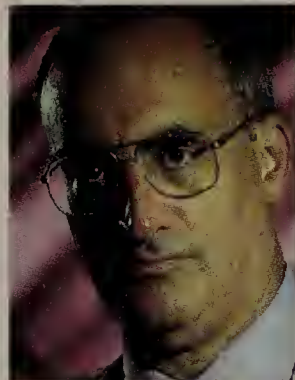
Face-off

Should the U.S. have a national broadband policy?

Rick White and Howard Anderson debate government's role in delivering broadband to the masses.



YES by Rick White



NO by Howard Anderson

For decades the U.S. has led the way in technological innovation. We put a man on the moon, designed the first supercomputer and created the Internet. Our future remains bright — but in order to build on the successes of the past and maintain our global edge, we need to address a key issue over the next decade: ensuring that all Americans have access to the high-speed broadband technologies that will power the future.

Specifically, the U.S. needs to make broadband a priority and set a national goal. Technology Network (TechNet), a national network of CEOs from leading technology companies, supports the goal of making a 100M bit/sec broadband connection available to 100 million homes and small businesses by the end of the decade. One of TechNet's leading policy priorities is the Broadband 2010 Initiative, which is based on six principles that can spur the deployment of broadband across the country:

- Broadband policy must be technology-neutral. Government should not pick technology winners and losers. Instead, competition should drive the deployment of broadband technologies and services.
- Policy makers should exercise regulatory restraint to encourage the development of new broadband applications and services. So-called killer applications will drive broadband demand, thus spurring investment in the network. The Federal Communications Commission should continue to distinguish between basic and advanced services and refrain from regulating advanced services that are essential drivers of broadband demand.
- The goal of public policy should be to create a competitive environment in which market forces drive investment in a true broadband network, and regulation is unnecessary.
- States and local governments should promote streamlined rules that encourage broadband investment and greater intrastate and interstate consistency. Most important, companies willing to invest in a high-speed network should be able to access rights of way relatively free of regulatory restraints and excessive fees.
- Increasing the amount of spectrum available for wireless Internet applications is critical to ensuring a competitive environment of multiple broadband technologies — and the availability of broadband to rural communities. We need a national spectrum policy according to which spectrum is allocated to the highest-value commercial applications, with government revenue generation a secondary goal.
- We recognize that even in a regulatory environment that encourages accelerated broadband deployment, some segment of the U.S. population will not have broadband access. We support targeted investment incentives and other government policies that will encourage broadband deployment to these underserved communities.

Like putting a person on the moon, the deployment of broadband to all Americans by the end of this decade should be a national vision. With the right policies and a commitment to work together toward this goal, industry and policy makers can accomplish this imperative on behalf of the millions of Americans who will otherwise miss out on the growth, opportunity and quality of life that broadband can deliver.

White is CEO of TechNet. He can be reached at info@technet.org.

The two stories mirrored each other. The high-tech industry, in the form of a group of CEOs from major technology companies banding together under the name Technology Network, was lobbying for government support of a broadband initiative. Meanwhile, the steel industry was lobbying for a government bailout because steel is a "national resource." All of a sudden, we are a beleaguered industry, showing up tin cup in hand at the doorstep of the bureaucrats. How the mighty have fallen.

Maybe these two groups should merge and insist that every high-speed modem be made of choice, American-made steel weighing at least 15 pounds. Or come attached to the wrist of an Arthur Andersen consultant. Or be hidden in five bushels of winter wheat so we can align with the powerful farm lobby.

Cisco CEO John Chambers, co-founder of TechNet, ties the initiative into education, saying the future of our nation's competitiveness and our economic development depend on getting tax breaks for consumers to put in broadband. Chambers also believes that Cisco will start growing at 30% per year again. Chambers is in denial.

Companies involved in TechNet include Cisco, Intel, AT&T, Microsoft and other firms that would benefit from a network on steroids. Right now about 11 million households out of 101 million have high-speed access — an amazing number representing amazing growth. The TechNet initiative starts by suggesting the major beneficiaries would be the rural and the poor, but you know that's only the opening gambit.

For years, my answer to the question "What can government do to help high tech?" has been "Benign neglect!" The high-tech industry has been doing just fine, thank you, without the government.

I love the high-tech industry and have made some real money here, but I am still wedded to the idea that federal support of this national broadband initiative is not needed. The TechNet people are incredulous that "only" 12% of the homeowners who could get broadband have it; I am incredulous that we have gone from 4% to 8% to 12% in just three years. Remember, it took 20 years to get VCRs in more than 90% of the homes. TechNet isn't satisfied with getting just 1.5M bit/sec service to the home; they're pushing for 100M bit/sec. The real cost will be \$100 billion, which is as much as we have put into the ground since Alexander Graham Bell started.

The regional Bell operating companies are lining up behind Republican Billy Tauzin and Democrat John Dingell, who are pushing legislation that would let the RBOCs offer Internet access but not require them to share their networks cheaply with their competitors. It seems that all the heavyweights want some sort of government help — either legislation or tax credits and public policy — to make sure that broadband access is a national priority.

I am not a believer.

More online!

Log on to Network World Fusion to voice your opinion on this topic. Face-off authors Rick White and Howard Anderson will add their thoughts to the discussion.

DocFinder: 8722



Anderson is senior managing director of YankeeTek Ventures, a Cambridge, Mass., venture capital fund for early-stage technology companies. He also is founder of The Yankee Group and the William Porter Distinguished Lecturer at the Massachusetts Institute of Technology. He can be reached at handerson@yankeetek.com.

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new This network

Building corporate offices with flexible voice and data infrastructure requires collaborative design.

■ BY ANN BEDNARZ

Category 5 cable threaded through ceiling structures, fed down columns to modular furniture systems and then snaked across raceways embedded in cubicle walls is the status quo. It's the vanilla, one-size-fits-all, coach-class ticket to enterprise cable management in open office environments. It works, it's familiar, and pricing is predictable.

But ceiling feeds and wired furniture corrals don't address evolving workplace needs, say some architects and designers who are exploring alternative office arrangements. These pioneers envision flexible buildings where employees have the tools to alter their work environments as needed to create sometimes private, sometimes collaborative, work areas.

Just imagine ... an employee could slide movable walls in place for greater privacy, swing open panels for a department meeting or push together desks for a short-term project with a partner — all without the assistance of IT or facilities personnel.

Telecommunications infrastructure stands in the way of that vision, says Christopher Budd, associate principal at Studios Architecture. "More fluid forms of organization have been inhibited almost solely in terms of how power and data is housed," Budd says.

Consider a typical office cubicle and the cabling that runs through its panels. "A lot of the reasons why those types of systems are used is because they're just one big raceway," Budd says. But, in fact, the zigzag of cables makes the modular furniture less flexible than it was designed to be. Just to shift one panel in one cube typically requires coordinating IT and building personnel.

The inflexibility of cubicle systems affects not only users who have no control over their work environment, but also IT profession-

Just say no to furniture feeds

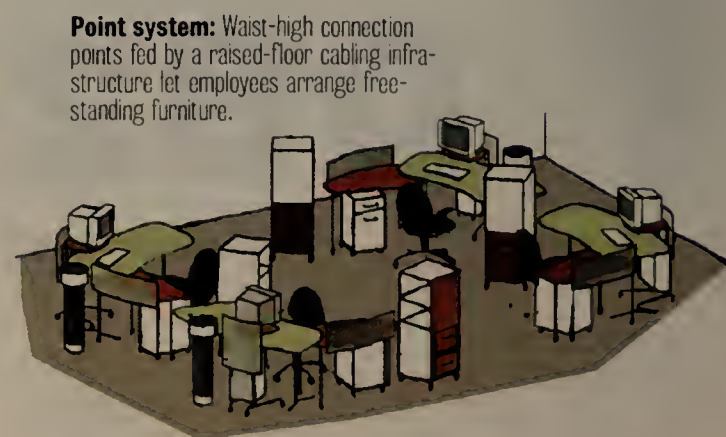
Studios Architecture is exploring alternatives to traditional cubicle-fed cabling infrastructures.



Scatter system: Studios' vision of a scatter system lets clusters of power and data cabling be slid along tracks suspended from the ceiling, like tools in a manufacturing assembly line system. The exposed cable trays allow easy access for IT staff.



Spine system: Power and data lines run through parallel spines, along which user workspaces are organized. Perpendicular walls positioned off the spine do not carry cabling so that they can be easily moved to accommodate fewer or more employees along a single spine as requirements change.



Point system: Waist-high connection points fed by a raised-floor cabling infrastructure let employees arrange free-standing furniture.

SAP's new global marketing headquarters

HLW International designed SAP's plaza as a convertible public space that can be opened to accommodate large groups for product launches or partitioned to host small groups in the privacy of the adjacent conference room.

Work surfaces are clustered around columns with wired network connections for roaming employees' laptops.

SAP workstations provide network connections and Internet access for employees and visitors. Pure Internet connections for visitors with laptops also are available.

Panels slide aside to accommodate large events such as press conferences.

A wireless LAN in the plaza area lets employees enjoy a change of scenery from traditional workspaces.

Flexible workspaces

Workspaces at SAP's new offices feature cylindrical walls that slide in place for privacy or open to create clusters of desks. Cabling is fed up from HLW's custom-designed in-floor cabling system to a wire management tray at the bottom of the translucent panels. A center column in each workspace provides support for pie-shaped work surfaces and flat-screen monitors that can be rotated as needed around the column axis.

als who can't easily access cabling for upgrades or changes. Today, progressive designers and clients are working to solve those shortcomings. They are exploring areas outside the suspended ceiling for running cable, such as in raised floors and exposed cable trays, and outfitting spaces with wireless LANs for untethered connectivity.

The idea is to let employees make decisions about where they work and to make the infrastructure to support that work flexible and accessible. Getting to this point requires companies to think differently about how work gets done and, consequently, how space should be laid out and network infrastructure designed.

"A lot of organizations are accepting that they are relatively complex and that they have different kinds of workers," says Todd DeGarmo, managing partner of Studios' New York and Washington, D.C., offices. "What we've really gotten away from is the one-size-fits-all approach to housing people."

For the Baltimore offices of professional-services firm Andersen, Studios renovated space in a former power plant on the city's historic Inner Harbor. Flexibility was a key design driver. Studios suspended telephone, data and electronic cabling beneath the ceiling in open cable trays for easy access. Instead of fixed furniture systems, Studios created a series of linear spines along which power and data cabling



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Tips for designing wireless networks and peruse more photos of cutting-edge infrastructure.

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runs. Users can arrange freestanding furniture around a spine any way they prefer. Because the workspaces are populated by a transient group of consultants, seating for the most part is unassigned. Users reserve locations on the days when they plan to work in the office.

A reservation system for work areas also is part of the new global marketing headquarters for software maker SAP in New York, designed by architecture and engineering firm HLW International. Regional salespeople can call ahead and reserve a workspace. Other employees have assigned cubicles — but not of the fixed, orthogonal type. Rather, workspaces feature translucent, semicircular panels that rotate to create private or open configurations. For a change of scenery, staffers can tote laptops to a cafeteria and plug into SAP's wired or wireless network. Internet access stations for clients and visitors round out SAP's connectivity selections.

From the beginning, SAP's internal IT professionals worked with HLW on the network infrastructure required to support all these options. The design team chose to run the cabling in the floor, which let them bring power and data boxes up at any spot. However, the wait for a traditional raised floor system was too long, so the team designed its own, says HLW architect Susan Boyle, who was partner in charge of the SAP project. HLW created a grid of pipes, through which the electrical and data cabling was threaded, and encased the pipes in a shallow, lightweight concrete slab.

"We didn't want to have the network and all the technology pieces come in as a Band-Aid at the end," says Rick Stockton, SAP senior vice president of global events marketing. "When you're trying to build space that is appealing and that people are going to want to work in, you have to bring the IT guys in on the front end. If you don't, you end up with a beautiful space with extension cords everywhere," Stockton says.

HLW's Boyle says the sooner you bring IT on board, the less surprises there are. Technology influences the work process today in a much bigger way than it did 10 years ago, because it's such an integral part of how people work and business gets done, she says. "You're dead in the water now if you don't get that and start very early." ■

BlueSpace project

IBM's Pervasive Computing division and furniture manufacturer Steelcase joined forces to design BlueSpace, their vision of the office of the future. The project integrates physical workspace components with individual environmental controls and wired and wireless network technologies. IBM says the team will deploy BlueSpace prototypes after July.

The Everywhere Display projects information onto any surface, including walls, desktops and floors. Wireless sensing technologies let employees use their fingers as cursors. When a visitor wearing a guest badge is nearby, the system reverts to a generic image for confidentiality.

The BlueScreen touchscreen lets users control temperature, airflow, white noise volume and lighting.

The Monitor Rail includes a rotating monitor arm that lets users easily reposition monitors.

Employees can show current projects and schedules on the integrated Threshold screen.

The Threshold is a movable work surface, ceiling and wall component that slides in place for more or less privacy. Colored lights indicate if an employee is away or busy, for example.

IT expertise required

Getting involved in a corporate move or renovation? Here are some issues to consider:

Site amenities. The availability of metro Ethernet service could sway some commercial building tenants, says Lawrence Orans, senior analyst at Gartner. Service providers such as Yipes Communications often require customers to be within one-quarter mile of fiber connections before they'll bring service to your building, he says. So scout sites carefully if metro Ethernet service is on your agenda.

Life span of cabling. Companies can expect cabling to last seven to 15 years — which translates into two or three generations of gear such as switches and routers, Orans says. It makes sense, then, not to skimp on cabling.

Preserving historic details. Consider running fiber to the desktop if you're working in an older building with historic detailing to reduce the number of wiring closets you'll need. But in exchange for the distance flexibility it offers, fiber carries a bigger price tag.

Wiring the workplace. Keep in mind that work isn't a stationary activity. Employees are becoming increasingly mobile within office buildings, carrying laptops to conference rooms and cafeteria areas and expecting to find network connectivity options. Plus clients and visitors often require Internet access, says Tim Kearney, associate principal at Studios. Planning the infrastructure in advance can save resources later.

Laptops vs. desktops. Laptops draw less electrical power than desktops and require less cooling. The difference in the amount of heat generated is significant enough to reduce your overall construction budget by a few dollars per square foot, if you can fully commit to laptops at the start of the design phase, Kearney says.

Server room expansion. Data centers typically require structurally reinforced floors and greater cooling capacity than traditional office space, Kearney says. To accommodate future growth, Studios sometimes will design adjacent areas with the idea that they might someday be consumed by server room expansion. It's less expensive to add the steel reinforcements and leave room for extra air ducts during the construction phase than it is to do it later, Kearney says.

— Ann Bednarz



These tools can help firms with large voice and data budgets track their assets and reduce expenses.

That's where enterprise telecom management can help. This proactive, continuous approach to managing telecom services reduces costs by weeding out billing errors, identifying inefficiencies, planning for future capacity and centralizing asset management. If you spend at least \$1 million on voice and data services, consider implementing an enterprise telecom management tool or outsourcing that responsibility.

The capabilities of communications services management tools might vary slightly, but each must have these core components:

- Enterprise-class server application with Web interface to database.
- A central inventory that includes all technical and billing aspects of each circuit.
- Data management and reporting to track bills, contracts and circuit management.
- Integrates with other IT applications, such as help desk systems, network and desktop management platforms, enterprise resource planning and accounting.
- Links to carriers and other service providers through XML or extranet.

As demand for enterprise telecom management picks up, you can find tools from several players. Most of the companies seem to come from three segments: traditional telecom operations support system vendors such as Circuit Visions, Hewlett-Packard and Metasolv; bill payment service providers such as Profit Lab, Quantum Shift, Stonehouse, Teldata Control and TSR; and consulting firms such as Accenture.

Product costs are a moving target. A large corporation easily can spend anywhere from a few hundred thousand dollars to a million dollars to set up a robust enterprise telecom management system and expect to save between 10% to 30% of overall telecom costs. Mid-size businesses may choose to invest far less and still

Enterprise telecom management

■ BY BRYANT DUNETZ

Telecom services account for one of the five largest expenses of most corporations, but these costs are among the most difficult to manage. Compounding the challenge, IT executives need to trim their budgets while maintaining a solid network infrastructure.

see a healthy ongoing reduction in operating costs.

Enterprise telecom management lets you manage your telecom operations on a continuum. It's not cost-effective for everyone to strive for the highest levels — the key is to determine what degree of enterprise telecom management you need to realize the optimal return on investment. Regardless of what level of management you're seeking, a communications services management system that lacks an inventory component will add little value.

Think of deployment as a series of related projects to perform and maintain (see graphic, below).



More online!

- Find more ways to trim telecom costs.

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Step 4: Financial audit.

Identify circuits in your inventory that are not being billed correctly. A one-time financial audit can lead to significant financial recovery, but the real savings come from monthly bill verification. This audit mostly can be

automated with an enterprise telecom management tool, provided your inventory is accurate and complete.

Step 5: Network optimization.

Once you've accomplished the above steps, identify and implement network changes that will lead to optimal performance and savings. You might find that you have multiple DS-3s that are underutilized and you can consolidate channels, or you may get an alert reminding you of circuit contract renewal dates.

The five steps described above are not mutually exclusive and do not have to be completed sequentially. However, it bears repeating that none of these projects can be fully realized without an accurate, centralized, telecom-based inventory system that is connected to an order system.

Full-scale enterprise telecom management may not be for everyone, but elements of this approach may be valid and useful for your company.

Dunetz is president of Telco Exchange, an online marketplace for high-bandwidth communications services. He can be reached at info@telcoexchange.com.

Accurate assessments

Enterprise telecom management is a continuous process of projects to perform and maintain.

Go live

Steady state

1 Install and configure enterprise telecom management platform

2 Inventory capture and cleanse project

3 Circuit inventory audit project

4 Financial/billing audit project

5 Network optimization project

Run enterprise telecom management platform

Increasing integration of systems

Management

Strategies

■ CAREER DEVELOPMENT
■ PROJECT MANAGEMENT
■ BUSINESS JUSTIFICATION

IT portfolio management

Balancing risks and rewards of projects yields significant returns.

■ BY JOANNE CUMMINGS

Investing your entire nest egg in one risky Enron-like venture is unwise to say the least. So why do so many IT organizations bet the bulk of their budget on one huge, risky project? Try applying the same diversification principles that aid your investment portfolio to your IT project portfolio.

IT portfolio management is a methodology for ensuring every project within an IT organization's "portfolio" is analyzed and balanced for risk and return. When implemented correctly, IT portfolio management ensures that the entire range of IT projects performs successfully in real-world conditions.

"It's not unusual for an IT organization to carry one high-risk project, and not much else," says Doug Hubbard, president of Hubbard Decision Research. "But if your stock portfolio looked like that, you'd be in trouble."

IT portfolio management helps get a handle on that. "It ensures that every project makes sense in terms of risks and rewards. If the risk is too great or the reward too little, the project doesn't get funded," Hubbard says.

Mary Lou Griffith, senior IT planning adviser in the Department of Information Services for the state of Washington, agrees. The state adopted IT portfolio management about three years ago and has since seen the average IT project decrease in size, scope and complexity, while the success rate has increased markedly.

Before implementing diversification principles, the state struggled with huge, unwieldy projects. One such project, the License Application Migration Project (LAMP), aimed to merge data on driver's licenses, car, and boat registrations. The effort grew too big, ate up a lot of funding, missed scheduled deliverables and was canceled, but not before a great deal of money and IT trust were lost.

"We had to turn the lights out on LAMP," Griffith says. "After that, we decided we needed to find a better way to manage these things."

In its most basic terms, IT portfolio management consists of three steps. The first is to list in a central place every IT project in the organization, together with its resource requirements and stated objectives.

"You see right away where projects overlap," says James Albin, vice president of IS for Mercy

Health Partners in Toledo, Ohio. "Inevitably, some of those projects either get pared down or stopped altogether. That's a savings right there." For example, two departments may have similar initiatives for building customer-facing Web sites. Once that becomes clear, IT resources can then be combined or even reduced.

The second step

Unfortunately, that first step is where many organizations stop the process. But the key to reaping the true benefits of IT portfolio management is to follow through and evaluate the projects for risk and return.

According to Hubbard, the major risk factors most often glossed over by IT are project size, adoption rate/utilization and chance of cancelation. "People don't evaluate the risks, or the benefits for that matter, because they say they are intangible," Hubbard says. "But there are no intangibles. You just haven't figured out how to measure them yet."

A typical intangible benefit to many IT pro-

jects is user empowerment. "Well, how would you know if users were more empowered?" Hubbard asks. "Maybe product development is faster, product quality is higher, the organization is more flexible. Those things can be measured. They're not intangibles."

For its part, Washington state has put together its own risk assessment matrix, in which it categorizes projects as low, medium or high risk in terms of their effect on the public, their visibility and the consequences of failure. A main criterion that lands projects in the high-risk area is a budget of more than \$10 million.

"Since we've implemented this, we see very few projects as large as that," Griffith says. "It's in the end-user agency's best interests to keep things small and keep them under the radar. The benefits would have to be particularly high to get past such a high risk factor."

The third step

Step three, ongoing risk assessment, is also often overlooked. Risks need to continually be assessed as the project progresses. "If there's a slip in time, cost or scope, those are new parameters, and they need to be assessed again in terms of risks and benefits," says Howard Rubin, executive vice president at Meta Group. If the benefit no longer outweighs the risk, the project needs to be revamped or canceled.

Another area people need to focus on is value. "Too often, IT is focused on delivering projects on time, and on budget, when the real concern should be whether the intended value was delivered," Rubin says. If the project goes like clockwork, but doesn't gain acceptance, it's still a failure.

When implemented correctly, IT portfolio management ensures the projects IT implements are those with the most value to the business.

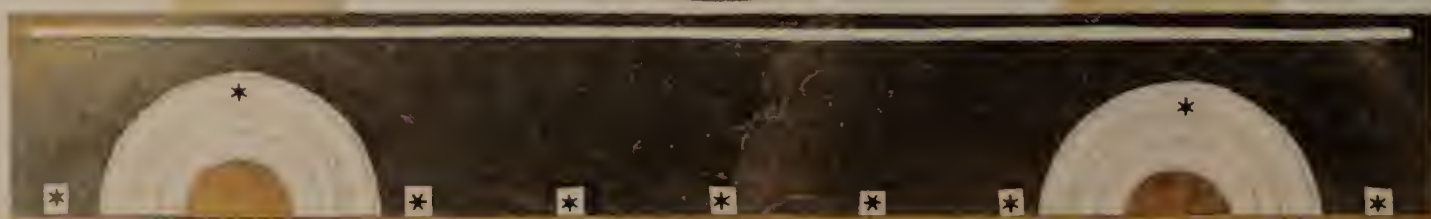
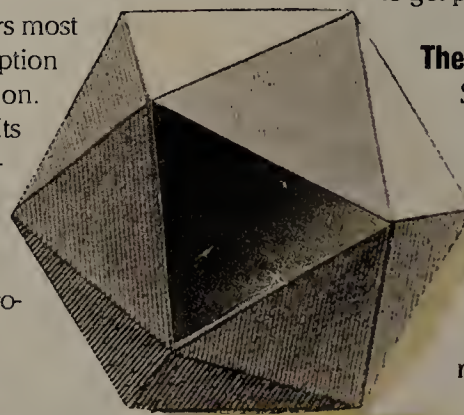
Mercy's Albin has seen those benefits already. Since his organization adopted IT portfolio management, it has lopped \$4 million off the IT budget without significantly affecting patient care or services. "We were going to have to lose the \$4 million anyway for budgetary reasons," he says. "But portfolio management has helped us ensure the money we do spend gets earmarked to the right projects with the highest value and return." ■



More online!

Check out the risk assessment matrix the state of Washington uses to categorize projects.

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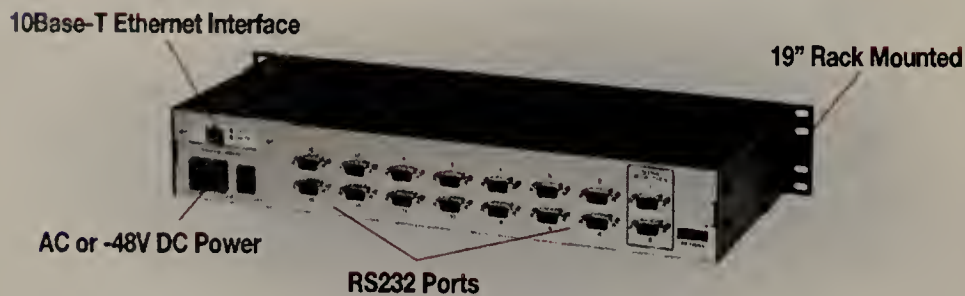
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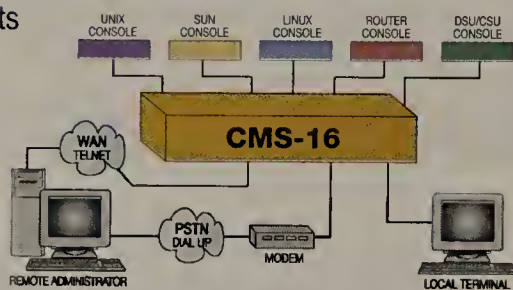
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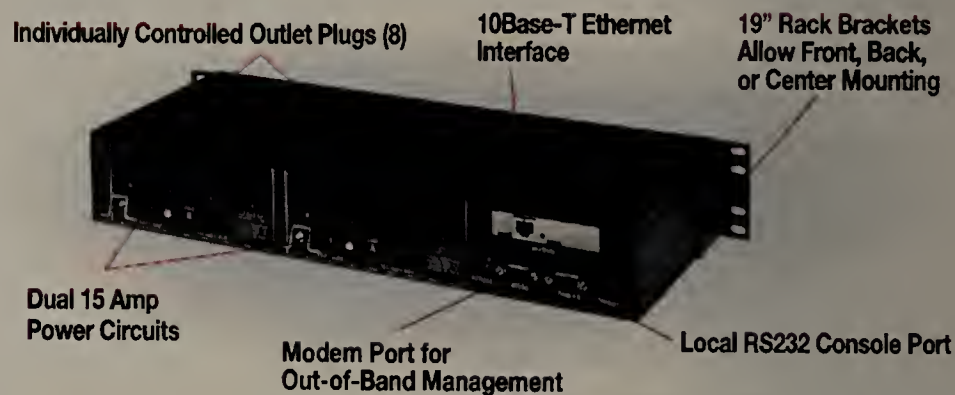


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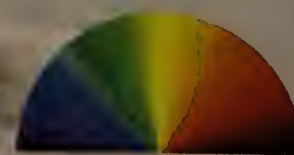
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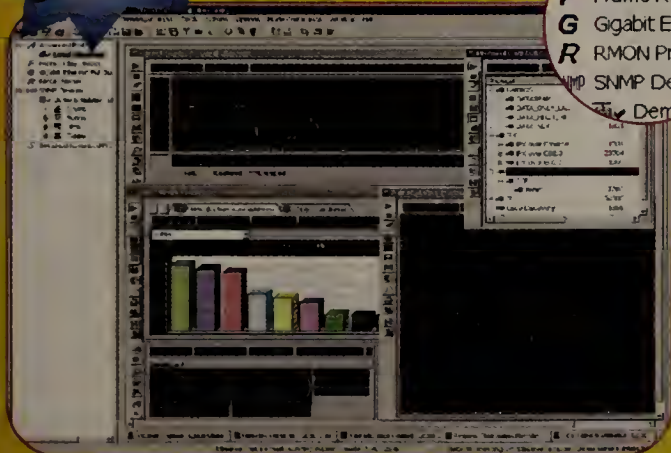
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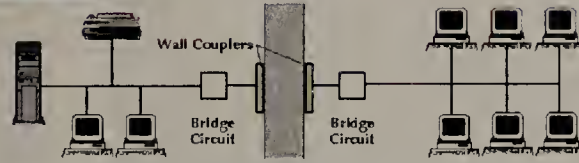


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Under close supervision of Technical Leader or other technical supervisory personnel, analyze and refine computer system requirements, research and recommend network and system hardware and software to meet customer requirements, assemble computer systems for turnkey delivery, and participate in related sales support, implementation and other activities utilizing networking, computer hardware architecture, HTML, TCP/IP and IPX/SPX protocols, DOS Batch and RAID Systems for work stations, servers, microcomputers and notebooks. Requires B.S. or equivalent level degree in Computer Science, Computer Engineering, or a closely related field. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicant must be able to perform job duties on date of application. Position is with Equus Computer Systems of Missouri, Inc., 2000 Westport Center Drive, St. Louis, Missouri. Send resumes to: Charles Chu, General Manager, Equus Computer Systems of Missouri, Inc., St. Louis, Missouri 63146. EOE

JOB OPPORTUNITY: Senior Systems Analyst

Senior Systems Analyst. Pasadena, CA. Duties: Using C++/STL, design & implement key components of a distributed database system. This includes developing mathematical models of large amount data distributed across network, & its associated libraries, for forecasting purposes; a proprietary file system for the database system; & a Java-based web GUI. Oversee deployment of system on Windows NT & Unix platforms. Reqs: Master's or foreign equiv in Mathematics, Comp Sci or a closely related field. To apply send resume to: Phoebe Wilson, Acting CFO, Knowledge Decision Sciences, Inc., 211 W. Franklin St, Monterey, CA 93940.

VisionTek, a leading manufacturer of computer peripheral products located in Gurnee, IL has excellent career opportunities for qualified individuals to join our IS team. **SR. PROGRAMMER ANALYST:** We are seeking individuals to design, develop, implement and test new SAP application; Interface other systems with SAP reporting, conversion, SAP script and EDI. This position requires solid communication skills, BS or equivalent in Engineering, Electronics, Math or related and relevant work experience. Part of the relevant experience must include 1 year using SAP and ORACLE. Mail resume, transcripts, references and salary requirements to VisionTek, Attn: HR-SPA, 1175 Lakeside Dr., Gurnee, IL 60031-EOE. M/F/D/V.

SOFTWARE ENGINEER to provide consultancy in design, analysis, development and maintenance support for Customer Information System for utility industry on IBM mainframe legacy systems using CICS, COBOL II, DB2, VSAM, JCL and Easy-Trieve; provide performance review of on-line and batch application code; analysis and performance tuning of SQL used in data processing programs. Require: M.S. in Industrial/Mechanical Engineering/Computer Science and three years experience in the job offered or any experience providing skills in described duties. Salary: \$73,000 per year, 8 am to 5 pm, M-F. Apply with resume to: CEO, F1, Inc., 359 S. Franklin Street, Valparaiso, IN 46383-6423.

Software Engineer sought by information technology consulting company in Denver, CO to work in Denver and other unanticipated job sites in the U.S. Design, develop, and test web-based computer software applications that operate on UNIX and Windows operating systems and which access ORACLE relational database management systems. Use JAVA, CORBA, C, C++, and HTML in the design, development, and testing processes. Requires Master's or foreign equivalent in Computer Science or related field, including Mechanical Engineering; 1 yr exp. as a Software Engineer performing the core duties and using the technologies described above. M-F; 8am-5pm; \$66,100/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202 & refer to Job Order Number CO 5014444.

System Engineer

Test, install and maintain computer operating system software; monitor/install data communication lines; design/maintain the NT infrastructure, trouble-shoot networking issues; develop/implement computer networking plan. Master degree in computer science or computer information system required. Send resume to Mr. Jonathan Leong, JLA Insurance Agency, 7700 Edgewater Drive, Suite 265, Oakland, CA 94621

Software Engineers needed. Technology Sourcing Assoc. has senior & mid-level positions available for qualified candidates possessing MS/BS or equiv. and/or relevant work exp. Duties include: design & develop software applications; modify, customize & enhance software programs. Work with 3 of the following: SAP, Siebel, Oracle, C, and C++. Mail resume, transcripts & references to: Technology Sourcing Associates, Attn. HR, 22138 Saticoy St., Canoga Park, CA 91303.

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Geographic Information System Programmer Analyst (The Woodlands, TX): Designs and implements applications to process Geographic Information Systems ("GIS") data generated by laser technology using AML and C++ programming skills in Windows NT and Unix. Designs, develops, and implements custom GIS applications in forestry applying knowledge of GIS and forestry ecology. 1 yr related experience. Contact: Dan Phillips of Terra Point LLC at 4800 Research Forest Dr., The Woodlands, TX 77381. (281) 364-4082 (T); (281) 363-7931 (F).

SOFTWARE ENGINEERS (8 positions): require Bachelor's in Engineering/Computer Science/Mathematics/Science or closely related field with experience providing skills in described duties, at \$60,000 per year; Senior Software Engineers (8 positions) with Master's and two years experience, at \$65,000 per year. Provide on-site consulting in design, analysis and development of operating systems-level software for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SOL Server and Sybase; e-commerce and web applications development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 applications on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resume to: YASH Technologies, Inc., Human Resources, 605 17th Avenue, Suite 1, East Moline, IL 61244.

Full time Senior Analyst responsible for analyzing and accessing current standards, languages and implementation strategies for streamlining and use for clients. Develop test case scenarios and build scripts as necessary to support the Software Quality Test environment. Perform bench marking analysis between different language approaches and identify client system requirements. Design and develop system and user workflow models and system processing modules. Must have a bachelor's degree in CS or any engineering discipline. Must have 2 yrs of exp. in the job offered. Salary \$73,430/yr. Send resume to: Hubert Bares Intec Telecom Systems 2711 LBJ Freeway Ste. 512, Dallas, TX 75234.

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Technical Publications Writer: Write/edit technical publications re computer systems installation, maintenance & operations: organize materials & complete writing assignments to assure clarity, conciseness, style & terminology. Req BA in English or related. Hrs: 8a-5p, M-F. Send resume to Microlearning, 1395 S. Marietta Pkwy, Bldg 200 #234, Marietta, GA 30067. Ref RR

Programmer Analyst. Using AS/400, to analyze, develop & integrate local solutions for local systems enhancements, prepare tech. specs. for devlp't of programs, perform research & tech. analysis for existing systems, program and modify existing systems, etc., using COBOL and/or RPG IV, CL, SOL and AS/400 database, development tools and utilities. Requires bachelor's degree in IT related field and 2 years exp. 40 h/wk. Position in Atlanta. Resumes to: Coca-Cola Enterprises, ACF HR, PO Box 723040, Atlanta, GA 31139-0040. EOE.

Programmer/Analyst (Jacksonville, FL): Analyze, design, develop, implement & maintain mainframe legacy applications on 3270 systems & distributed database applications. Work w/ DB2, CICS, JAVA, C++, COBOL, COBRA, RMI, XML & MOSeries for Java API for integration w/legacy applications. Req. B.Sc. in C.S., Electronic Engineering or other related field + 2 yrs exp. in job offered. Resume to: HR Manager, SoftTech, Inc., 6025 The Corners Pkwy, Suite 204, Norcross, GA 30092

Software Engineer: Analysis, design & development of online & batch transaction processes & commercial & bus web apps using CASE tools, 4GLS, Visual Interdev, XML, SQL, ASP, PL/SQL, JavaScript & VBScript in DB2, Oracle & SQL Server environments for multi platforms (Win, MVS, UNIX, DOS) running on IBM & Sun Sparc Ultra II. Req. BS in comp. sci, engg, or related field & 3yr exp. including large volume online production & reconciliation sys & exp. w/CICS, DB2 & Oracle. Resumes to: N.Vuppula, Software Services Resources, 3574 Old Milton Pkwy., Alpharetta, GA 30005

SR. SYS. ADMIN for 24x7 data centers & clients in Metro NYC. Rotating shifts; 24x7 on-call as sched. Req. BSCS & 3 yrs. Sys Adm exp. Visit www.verio.com/company/jobs/to apply online. No calls. Principals only.

SW Eng'rs: Rsrch, dsgn, devlp, test & implem't internet SW security systems w/ C/C++, Psec, PKI, and PPTP protocols on SCO Open Unix env'rmt & NT; Dsgn web-based interface & upgrade sec. sys. w/ Oracle8i, C/C++, VC++, JDK1.2, ASP, ADO on SOL Svr. 40h/w, 8-5, BSEE or foreign equiv't & 2 yr wk exp in job/any posit'n involv'g C/C++, Psec/JDK1.2. Resume to Jastech, Inc. jti02@yahoo.com /fax: 904-642-1890.

Database Administrator: Wanted by NJ-based co. with job loc. in Sarasota, Florida. Must have B.S. in C.S., Math., Eng. or rel. field, with 3 yrs. exp. as System Analyst/ Software Consultant or rel. occupation & 3 yrs. exp. with database design and 3 yrs. exp. utilizing informix. Respond to: hr@jtax.com, HR Director, Jackson Hewitt, Inc., 339 Jefferson Road, Parsippany, NJ 07054

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Software Engineer Sr.- design & implement JTAPI, ACD, & TAPI service providers to facilitate Java & C/C++ developers to write telephony programs. Consult with engineers & scientists to design the architecture of the telephony system & interfaces between hardware & software. Must have PhD in Computer Science or Engineering plus 2yrs related job exp. Please fax resumes to MECA: 609-919-4345.

Jr. Programmer: Plan, develop, implement & test. Utilize C, C++, UNIX, Visual Basic, JAVA, SAP, MM/SD/ABAP, Mainframe, Client/Server apps. Perform Database/Systems admin. and warehousing. Req: Bachelor's Degree in Comp. Sci., Math, Eng., or related. Resume: Uniglobe Technologies, Inc. 6500 McDonough Road St. C15, Norcross, GA 30093.

Precious Metal Fabrication comp. req. Prog. Analyst w/BS deg. & 2 yrs. exp. or its equivalent to design, develop, implement & modify Financial, inventory, shop floor business appl. & Txbase Manufacturing software in client svr. Unix Environment using Sybase & APT frontend. Development of Software using DWB, APT, SOR. Work with Unix environment incl. SUN servers/workstations, Intel PC systems, Sybase and TXBASE. Maintain users accounts, backup, restore system data. Equivalent can be based on edu. & exp. eval. Travel & relocation will be req. anywhere in the U.S. as assigned. Send Res. to Attn: Recruiter Handy & Harman, 1770 Kings Highway, Fairfield, CT 06430.

Computer Programmer (Chief) (NJ)-Resp. for overseeing the prep. of comp. programs to process financial data for financial modeling & portfolio & fund analysis. Interface w/sr-level mgmt in determining prgm'g and coding needs. Supervise & assign work to prgm'g personnel. Dir. systems testing & netwk troubleshooting for netwk anomalies, suggesting changes & directing modifications to adapt programs to new reqs & increase efficiency. Gather & format documentation of program development & prep. reports on technological systems to update sr mgrs. Analyze/convert financial data to design accounting systems. Resp. for training subordinate prgm'g personnel. Req. Mast. in Comp. Sci, Comp. Eng'r. or Comp. App. or foreign equivalent, 2 yrs exp. in job or 2 yrs. related Analyst exp. Related exp. must include C++, Visual Basic, MS SQL Server for database & portfolio analysis. \$72K/yr. 40 hrs/5 day/wk. Send resumes to: James Wang, Zais Group LLC, The Galleria Building 1, 3rd Fl., 2 Bridge Ave., Red Bank, NJ 07701-1106.

Systems Analyst. Analyzes user requirements, problems to automate processing or to improve existing computer systems. Bachelor of Science in Computer Science, Engineering or math-related and 2 years of AS/400 hardware, 2 years RPG/400 language, and 2 years Lawson. \$72000/year. Apply by resume only to William T.Wiley, Sr. Vice President, Y.K.K. (U.S.A.), Inc., 1306 Cobb Industrial Dr, Marietta, Georgia 30066.

Full-time Senior Analyst. Responsible for the development of customized Business Support Control System for the wireless telecommunication industry, working w/ BSCS. Assist clients in evaluating business needs & develop testing strategies, plans & enhancements for existing software using C, Java, PL/SQL, Unix, Oracle & develop Design Change Request (DCR) & write DCR & Functional Specifications (FSPs). Provide management guidance during conversions or application upgrades, resolve data conversion issues and oversee modules setup configuration & data migration. Must have Bachelor's degree in Computer Science or related field. Foreign degree equivalent accepted. Must have 2 yrs. exp. in job offered or position w/ same duties. Send resume to Tangela Burks, SchlumbergerSema, 100 Milton Park, 30000 Mill Creek Ave., Suite 100, Alpharetta, GA 30022.

PAREXEL International currently has positions available at our 900 Chelmsford Street, Lowell, MA office:

Senior Manager E-Services- Requires Bachelor's or equiv in CS, Scientific Engineering field, or related plus 3 yrs exp in clinical software development, including 1 yr in statistical analysis and modeling and 1 yr with expanded access clinical programs (exp can be gained concurrently). Must also have knowledge of US and European drug regulations.

Programmer/Analyst: Requires Bachelor's or equiv in CS, Engineering, Math, or related field plus 2 yrs exp in computer field, at least 1 year of which using SOL Server, Oracle, & Lotus Notes.

Oracle Database Administrator: Requires Master's or equiv in Systems Engineering, CS or related field plus 5 yrs exp in database programming using Oracle in an NT environment and associated networking hardware.

Please respond to hr@parexel.com or Attn HR, PAREXEL International Corp., 195 West Street, Waltham, MA 02154. EOE.

Lead Database Analyst wanted in New York office of large insurance company to install, tune, maintain and upgrade Microsoft (MS) SQL Servers. Upgrade MS SQL Servers 7.0 to MS SQL Servers 2000 on Windows Advanced Servers. Analyze existing EDI, document processes involved in the system using HTML and support EDI wireless application. Prepare and execute the plan, design and migration of Access 97 databases to MS SQL Server 7.0. Involved in bidirectional synchronization with the developing Siebel System and the existing MS SQL Server environments. Responsible for assessing the parameters for database sizing, capacity planning and the design and management of multiple databases. Write server scripts to support the JAVA and Visual Basic applications at the front end, create triggers, stored procedures and views for the entire system, and write codes to support the automated backup, loading and unloading of data. Advise on best practices to the development team. Replicate the production of test databases and set up test environments for various MS SQL Server related projects. Perform analysis of database to understand end users' needs and coordinate projects to provide support to database users and report weekly on the progress of projects to senior management. Must possess a Bachelor's degree in Computer Engineering or Computer Science and at least 2 years and 6 months experience in the job offered or 2 years and 6 months experience as a Programmer Analyst and/or Database Administrator utilizing MS SQL Servers. Send resume to: Segolene Prot, AXA Financial, 1290 Avenue of the Americas, New York, NY 10104. EOE M/F/V/D.

APPLICATION DEVELOPER to perform design, analysis, development, testing and implementation of business applications software on IBM AS/400 and Windows using relational database DB2/400 and Case tools Cool Plex and Cool 2E, RPG/400 and CL/400 with Java, Java Beans and VC++. Require: Bachelor (or equivalent) in Computer Science/Electronics Engineering and five years experience in the job offered or any experience providing skills in described duties. Competitive salary and benefits. Apply with resume to: Manager, Application Development Manufacturing, AFG Industries, Inc., 1400 Lincoln Street, Kingsport, TN 37660.

Applications programmer: Write computer programs and/or software utilizing knowledge of plant pathology oriented data processing algorithms, irrigation systems control and agricultural data acquisition/processing. Experience in low level, embedded system development, hardware emulators. Must be fluent in several assembly programming languages for the Intel 8080, 8085, 8048, 8051, Motorola 86000 series, Microchip 16 series, Atmel and Texas Instruments microprocessors. Experience in hardware design development, sensors, actuators, radio communications and signal analysis. Fluent with Visual tools series, C, C++ and Java programming languages and good understanding of computer operating systems. Ability and solid experience developing device drives under several operating systems. Full scale, DCOM client server based applications including user interfaces, database connectivity, Pipes and Sockets networking under Windows NT OS. Experience with communication protocols ISDN, D4, Dialogic, serial protocols and strong knowledge of COM, SOL and STL. Strong ability to debug preexisting software, machine code/assembly language and reverse engineering skills plus unusual development speed. Fulltime position located in Boca Raton, Florida. Two years experience required. Qualified applicants send resume only to Adcon Telemetry, Inc., 1001 Yamato Road, Suite 305, Boca Raton, Florida 33431.

CommVault Systems, Inc. is need of the following computer professionals for its Oceanport, NJ location:

Software Developers- Formulate, develop, & design computer software including device & system drivers, & system patches. Develop & direct software system testing procedures, programming, integration, & documentation. Req'd: Bach. Deg in Comp. Science, Eng'g or related field, & exp w/ C, Solaris, & shell scripts.

Systems Analysts- Analyze user requirements, procedures, & problems to improve existing systems. Develop new systems to improve workflow. Review system capabilities to determine the feasibility of proposed programs. Req'd:

* Bach. Deg. in Comp. Science, Eng'g or related field & knowledge of Windows NT, Windows 98, and Java.

* Master's Deg. in Comp. Science, Eng'g, or related field & knowledge of Solaris, C++, & SOL.

Resume to: thoffman@commvault.com EOE.

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Design, develop, test and implement specialized software apps using (a) IIS5.0, Clarify, XML, VB, ASP, C, C++, CDO, MTS, SOL Server, Oracle & related tools in Sun Solaris/NT/UNIX; (b) Citrix ASP, IIS, SOL Server, DB2, Oracle/related tools, VB, ASP, Pro*C, Web methods, Citrix XPS, XML in Sun Solaris NT/2000; (c) Clarify, Clarify modules & tools-CB Exchange, DDE, UIE, Clear Basic, VB, Unix Shell Scripts in Oracle/related tools, SOL Server, reporting tools in Sun Solaris/NT/2000; (d) Web Logic, XML, EJB, JDBC, Java, Servlets, Cold Fusion, C, C++, Pro*C, Oracle, Sybase SOL Server and related tools, Utilities in RS 6000, Solaris, NT/2000. Consulting positions requiring extended travel. Prevailing wage/benefits. Send resume to Dale Blake, GPTS, 3250 Peachtree Industrial Blvd., Suite 203, Duluth, GA 30096. EOE.

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SOFTWARE ENGINEERS (8 positions) require Bachelor's or equivalent in Engineering/ Computer Science/Mathematics/ Science or closely related field with experience providing skills in described duties, at \$70,000 per year; Senior Software Engineers (8 positions) with Master's or equivalent and experience, at \$75,000 per year. Provide on-site consulting in design, analysis and development of software applications for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SQL Server and Sybase; e-commerce and web applications development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 applications on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in United States. Mail resumes to: Y & L Consulting, Inc., 7550 I H 10 West, Suite 940, San Antonio, TX 78229.

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Software continued from page 1

ignore upgraded software that adds only bells and whistles. But not every user is feeling that pressure. Carl Mercer, a research engineer for a telecom company, says the Oracle 9.x licensing changes have lowered his costs 41%. He notes that the changes benefit customers on high-end scalable processor architecture

How to fight back Been hit by strong-arm licensing tactics? Here are a few countermeasures:

- Review contracts thoroughly and clarify vague language.
- Do a detailed audit of what changes will cost; negotiate more favorable terms.
- Renew existing licenses before new rules that raise costs take effect.
- Blow the whistle on aggressive salespeople who emphasize expensive alternatives or threaten audits.

(SPARC) implementations and hurt those on Intel, but adds, "I do not believe Oracle has attempted to hit existing customers or existing products for additional money." Oracle says its latest issue is over conflicting interpretations of a licensing clause. Microsoft and IBM, while acknowledging that some customers will experience higher costs, say many will see lower costs, better support and services and simplified licensing

contracts. Microsoft's new licensing model, which begins at the end of July, requires users to be licensed for current versions of software or pay full price for new licenses when they upgrade. Microsoft has delayed the start of the program twice because of hostile reaction. IBM's program, launched late last year, combines maintenance and support into one package, which users say forces them to buy things they don't need. An IT executive for a midsized hospital told *Network World* that the licensing change increased his yearly costs by \$50,000. He called the increase "outrageous," adding, "I don't know who came up with this, but they are only thinking of IBM's profits." Imery's McGrady says he thought about dumping Office altogether, but that's a decision he and others can't make because the products are so ingrained in their networks.

"What do you change to?" asked a licensing manager for a large company in the restaurant and hospitality industry that relies on Oracle databases. "Once you're in, you're hooked. For us it is an infrastructure decision. It's like a mainframe." Two years ago, the licensing manager gave in to Oracle and switched from named-user pricing to per-processor pricing, the same type of switch some users allege Oracle is again trying to push on customers. "It was damn close to an eight-figure decision," says the licensing manager. "But the vendors have it figured out. You get something that works, and they know what it took for you to get to that plat-

Licensing changes

Analysts say changes made by vendors over the past year to licensing agreements point to the fact that software companies are trying to create a consistent revenue stream and counter lengthening upgrade cycles.

Company	Oracle	Microsoft	IBM
Product	Databases	Enterprise software	Enterprise software including that from Lotus and Tivoli
Change	Users allege Oracle is changing definitions as to what constitutes a connection to the database. Oracle says it's a misunderstanding.	New Licensing 6.0 program replaces existing upgrade programs with Software Assurance, which requires users to license latest software. Those that refuse face a hefty penalty when they do decide to upgrade.	New Passport Advantage volume licensing program bundles base technical support and software upgrades into a single package called Software Maintenance.
Impact	Users say change can force them to purchase more named-user licenses or commit to higher per-processor licensing.	Various analysts' reports say enterprise-licensing costs could increase by as much as 100%.	Users report licensing increases up to 80% now that they can't separate maintenance and support agreements.
Reaction	Users feel pressured into spending more to license the database.	Outrage.	Users rushing to renegotiate with IBM to control costs.

form. And they know you don't want to change." Some say the licensing and pricing is returning to the mainframe days. "My Microsoft SQL Server enterprise edition with Software Assurance is \$20,000 for one processor," says Pam Peschel, business support specialist for Denver Water. "For a quad, that's \$80,000; does that sound like mainframe pricing?" However, that attitude may define the times. "No one should be surprised that all these vendors are trying to create recurring revenue streams

because product life cycles are increasing," says Laura DiDio, a principal with Information Technology Intelligence. DiDio says software development five years ago was revolutionary. But today, software is evolutionary in that advancements are mostly feature enhancements that lead companies to question the value of upgrades, she says. That issue is reflected in the bottom line for vendors. Oracle's revenue from its database business has been down every quarter over the past year. Microsoft, which once derived more than 50% of its revenue from Office,

has seen that percentage shrink into the 30s. "But these licensing changes could backfire big-time because users don't have the money," DiDio says. Peschel says she has little choice but to comply. Although signing on to Microsoft's new licensing program increased her costs up-front, doing nothing and paying the penalties to upgrade later would have cost an additional \$200,000. She says things won't change until some bigger companies challenge the vendors. "It will take a group effort to stand up and change these software and licensing issues," she says. "We need big banks and firms like Gartner to stand up to the vendors. The little companies can't do it, so they are forced to comply."

Next week Gartner is hosting the Windows: Nothing but .Net. conference in Los Angeles where it plans to discuss alternatives to Microsoft products. "There is a lot of discontent over licensing, and users are looking to pick some places where they don't have to deploy Microsoft," says John Enck, a Gartner analyst. He says the alternatives include standards-based Internet messaging systems that could also solve the virus issues plaguing Outlook; operating systems from Novell or Linux; and public-domain software such as Apache Web servers.

Senior Editor John Cox contributed to this story.

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network. We've had two [external] security evaluations, and we're in the middle of a third. We're looking at: Where are our weak spots? Where are our vulnerabilities? The [U.S. Department of Energy] is helping us on our [Supervisory Control and Data Acquisition] systems. We're looking at: Where are our firewalls and how are we using them? What's our [demilitarized zone]? How can we make it efficient? We can't lock it up so tight that people can't get through it. By midyear, we want to look at whether we need to invest more money in next year's budget.

As CIO of Dominion, what have your biggest challenges been? It's keeping the focus. It's run-

ning the business while growing the business. It's risk management. And all that's about people. When the gas network was going down once a week, I didn't worry about what technology are we using so much as: Are the people doing the right things? Are we reacting right? Do we have the right tools? Do we have the right focus? Are we making the right decisions? When we had an operational problem, everyone jumped on it. So we lost sight of what we should be doing to look to the future. We weren't preventing fires. We were just putting them out. The lesson we learned is to plan better during the integration process and to look for the weak spots. The other lesson is that a problem is not going to go away. You have to persevere and fix it. ■

BackSpin Mark Gibbs



Politics, power and the job we love

In last week's column (www.nwfusion.com, DocFinder: 8742), I discussed strategy and tactics in the IT world. I also discussed how RFPs get used as a stalling tactic to buy IT time when groups in the organization are pushing for their IT projects to become high priority.

I received some thoughtful comments, such as the following from reader George Nezelek on how organizations can constrain strategic thinking: "Many organizations have to walk a fine line between inadvertently creating a climate where out-of-the-box thinking is discouraged and a climate where there is no box at all."

Backspin reader Riley Driver wrote with alternative definitions to strategy and tactics: "Strategy: The accumulation of advantages so one may employ tactics against one's opponent. Tactics: The use of one's advantages to make material gains against one's opponent."

Driver went on to note, "Tactics without strategy cannot win a war and always deals with the immediate — never planning ahead. Strategy without tactics is only planning — never implementing."

A related issue that came up several times in your letters was the delicate interplay that defines who has control in the IT environment. Each party —

senior management, business unit management, IT management, IT staff, consultants and vendors — has a role that affects the process of bringing new IT solutions into the company and how they interact is what makes IT easy, hard or impossible.

The processes include identifying, evaluating, selecting, implementing and, ultimately, metering out punishment and reward for the failures and successes.

And this is where the IT guys often make their big mistake. That big mistake is not concerned with the actual IT part of the process at all; it is concerned with politics that surround it.

Many of us in IT are so focused on making computers and networks run well that we tend to ignore the dynamics of organizational power play. IT people usually explain this away by saying that the effort to keep the IT wheels turning doesn't allow enough time to oil the gears of politics.

That may be true, but politics is an inescapable part of business. It doesn't matter what role you have in what organization, politics will be part of the environment. And you ignore politics at your peril.

If there was one thing in my past business life that I would change, I would have paid more attention to politics. But no, I stayed head down and focused on understanding and managing technology.

Like many of you, this wasn't just to fulfill my du-

ties, it was damn near a clinical obsession. And for a good reason: I loved it! To be able to really understand what the technology did and what it could do and be able to answer any question about it was an incredible buzz. But the consequence was ultimately having less power — less influence over the business strategy — than I could have had.

That was how it was for me and I'll bet it is for many of you. While this kind of dedication is great, the cost to individuals in IT, and even the whole IT group, can be significant.

The cost can be as simple as the IT group being disliked or ignored, to being as profound as IT having little effective authority in corporate decision-making processes and taking the blame for all IT problems, including those they didn't create. And the consequence of that is less power in the organization and more pressure, a downward spiral that leads to burnt out staff and job dissatisfaction. Ultimately, it can limit the ability of a business to grow.

As IT becomes increasingly important in business, IT people have to become more politically adept. The sooner we start playing politics seriously, the sooner we will get the power we need to effectively do the job we love. Next week, the truth about IT and politics.

Power plays to nwcolumn@gibbs.com.

'Net Buzz News, insights, opinions and oddities



Paul McNamara

PostX pushes the envelope

When PostX first knocked on *Network World's* door in April 1997, the start-up's PostX Envelope — an e-mail wrapper designed to let businesses securely deliver documents to customers — was rough around the edges. However, it had the look of a winner at a time when opening an attachment could be more maddening than uncorking a stub-

born bottle of wine.

Five years later, PostX can brag about A-list customers that include Charles Schwab, Merrill Lynch, Visa and the U.S. Postal Service, but the privately held company has not exactly made a household name for itself.

Enter Zero-Download PostX Envelope, an upgrade the company says will help it overcome a key obstacle to widespread deployment: namely, client software. The new version doesn't have any.

End users, in general, and consumers, in particular, have always had a love-hate relationship with client software: They love the capabilities that a snazzy e-mail add-on such as PostX can deliver; they hate the download and learning curve. However, interestingly enough, PostX says it wasn't client complexity that held adoption in check. The real inhibitor, the company says — and there's no polite way to put this — has been you folks: network policy setters who prohibit end users from loading any ol' software onto the company machine. (Not that they're criticizing such vigilance, mind you.)

With Zero-Download PostX Envelope, companies can send secure statements to their clients — at home or at work — without fretting about whether they have the appropriate client software. Everything needed to open and decrypt the password protected document arrives with the e-mail.

Now PostX says it can credibly tell would-be customers they can replace snail-mail documents with PostX Envelope for 100% of a client base. Anything less

greatly reduces the potential savings.

If the company's right, we may be able to check back on it again in another five years.

Is your workplace voice mail really yours?

A couple of weeks back we asked for horror stories about the rank-and-file abusing company resources by storing boatloads of personal junk on company networks. The request prompted this fascinating — if somewhat tangential — reply from reader Parrish Knight:

"Employees so often seem to think that they are entitled to something that is clearly not theirs [such as the server space issue you mention]," Knight writes. "For example, not long ago, our COO created a new policy declaring that everyone's voice mail at the office was to have the same password so that other employees would be able to get into the voice mail boxes on an as-needed basis. I didn't even blink when he made this policy — I simply went along with it. However, most of the other employees were outraged, saying that they had a 'right to privacy' regarding their phone calls."

"This kind of attitude is utterly baffling to me," Knight adds. "You are on company property, during company time, using company equipment to access a company service for [presumably!] company purposes. Absolutely everything about that voice mail belongs to the company. How can you possibly say you have any right to keep it 'private' from your company?"

A couple of points: Buzz cannot imagine what benefits this company might accrue from such an intrusive policy that could possibly outweigh the predictably fierce employee backlash. I can never recall needing to access someone else's voice mail. The policy seems dumb.

However, Knight is right about the principle. This isn't our stuff, so we don't get to make the rules, even when those who do use bad judgment.

No one reads the content of my inbox but me . . . I believe. The address is buzz@nww.com.

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